D R A F T

Water Utility
Financial Plan and Rates Study

Prepared for City of Fresno, California
December 22, 2014

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MUNICIPAL FINANCIAL SERVICES
2960 Valley Basin Avenue
Henderson, Nevada 89052

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List of Abbreviations

AF	acre feet (equal to 325,851 gallons)
AWWA	American Water Works Association
CIP	Capital Improvement Program
City	City of Fresno
DSC	debt service coverage
DWR	Department of Water Resources
FY	Fiscal year (July 1 to June 30)
FY15	July 1, 2014 to June 30, 2015
gpd	gallons per day
HCF	Hundred Cubic Feet (equal to ~ 748.1 gallons)
mgd	million gallons per day
O&M	Operation and maintenance

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Executive Summary

The City of Fresno, in conjunction with Municipal Financial Services, has analyzed the adequacy of revenues to meet projected expenditures of the water enterprise fund to determine whether revenues will be adequate to cover operating and maintenance costs as well as needed capital costs while supporting debt service obligations and meeting target reserve levels. Water rates and charges were developed for the five-year period Fiscal Year 2014 – 15 (FY15) through FY19.

The city recently rescinded four years of rate hikes that would have increased bills by 80% between 2014 and 2017. The rate hikes were passed in 2013 to support a large investment in surface water treatment capacity to relieve pressure on Fresno's over-drafted groundwater basin. The city rescinded the rates as part of a legal settlement with a ratepayer, who had sued the city and collected enough signatures to put the rate increases to a vote of the people.

Recharge Fresno Program

The City of Fresno invested in a program – known as "Recharge Fresno" – to meet Fresno's water needs and allow the replenishment of groundwater supplies. Recharge Fresno includes water projects that, altogether, will improve the reliability of the City's water supply now and for the future.

During September – November 2014, the City hosted a series of community forums that focused on Fresno's water future – including where to get water, how to make sure it's clean and safe and how to pay for it. The forum dates and topical focus are summarized below.

- Forum 1 – September 29, Fresno's Water Supply Issues and Needs
- Forum 2 – October 13, Solutions: Fresno's Water Future
- Forum 3 – October 27, Paying for Fresno's Water Needs
- Forum 4 – November 10, Summary and City of Fresno Next Steps

As a supplement to the City's process to raise awareness about water challenges, solutions and financing, the City held a Water Utility Financing Summit on October 20, 2014. The full-day summit included approximately 15 invited stakeholders along with water rate experts to provide industry-wide subject matter expertise.

Projected Capital Improvement Program Expenditures and Funding

In August 2013, the City engaged the engineering consulting firm CH2M Hill to provide capital project management support. CH2M Hill and the City have developed a comprehensive Water Capital Improvement Program (CIP) to address current and future water system needs.

Between FY15 and FY19, total projected CIP expenditures are approximately $429 million. The CIP expenditures are summarized in the following categories along with the total expenditures for each category:

- Intentional Groundwater Recharge - $6.4 million
- Raw Water Supply - $98.4 million
- Surface Water Treatment - $186.4 million
- Finished Water Distribution - $55.4 million
- Rehab/Replacement & System Upgrades - $82.5 million

Revenue Required from Water Rates and Charges

Water rates and charges were developed to generate sufficient revenues to cover operating and maintenance costs as well as needed capital costs while supporting debt service obligations and meeting target reserve levels. The approximate amount of revenues required from water rates and charges for the five-year period, FY15 through FY19, is $451,000,000. Revenues during the same period based on current (2010) water rates and charges would be approximately $313,000,000.

Projected Cash Flow and Debt Service Coverage

Annual expenditures, revenues and cash flow (represented by the ending balance for the enterprise fund) are shown in the figure below. Also shown at the bottom line of the figure are the annual values of the debt service coverage ratio and average monthly bills for single family customers with a 1-inch meter connection and different levels of water consumption.

One set of annual percent increases is based on average monthly water use of 18 hundred cubic feet (HCF) (approximately 13,500 gallons per month or 445 gallons per day).

The other set of annual percent increases is based on average monthly water use of 18 HCF in FY15, 17 HCF in FY16 and FY17 and 16 HCF in FY18 and FY19. A reduction of one HCF in water consumption is equivalent to approximately 25 gallons per day (gpd). The annual percent increases in bills with conservation reflect a reduction in water use of 25 gpd in FY16 and an additional 25 gpd reduction in FY18.

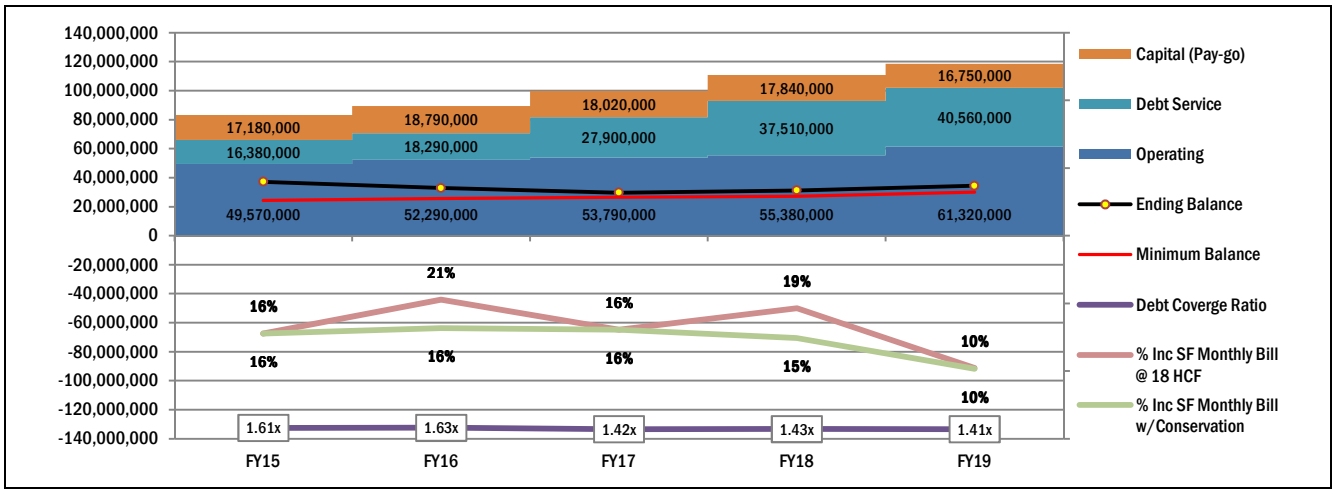

Figure ES-1. Cash Flow, Debt Service Coverage and % Increase in Single Family Bills, FY15 – FY19

Monthly bills are for a 1-inch meter connection. Bills w/Conservation reflect reduction in water use of 25 gallons per day (gpd) in FY16 and an additional 25 gpd reduction in FY18.

Recommended Water Rates

Projected rates and charges are shown in the table below. The effective date for FY15 is approximate; the effective date for subsequent fiscal years is July 1.

Table ES-1. Current and Recommended Water Rates and Charges, FY15 – FY19

	effective >	*3/12/2015*	*7/1/2015*	*7/1/2016*	*7/1/2017*	*7/1/2018*					
Water Rate or Charge	Current	FY15	FY16	FY17	FY18	FY19	FY15	FY16	FY17	FY18	FY19
Quantity Rates, $/HCF											
Single Family	$0.61	$0.95	$1.19	$1.39	$1.67	$1.86	56%	25%	17%	20%	11%
All Others	$0.745	$0.95	$1.19	$1.39	$1.67	$1.86	28%	25%	17%	20%	11%
Meter Charges, $/month											
All Users x/Irrigation											
¾-inch	$10.03	$8.50	$9.60	$11.00	$13.00	$14.10	-15%	13%	15%	18%	8%
1.0-inch	$13.51	$11.20	$12.70	$14.60	$17.20	$18.70	-17%	13%	15%	18%	9%
1.5-inch	$18.89	$13.10	$14.80	$17.00	$20.00	$21.80	-31%	13%	15%	18%	9%
2.0-inch	$27.09	$22.20	$25.20	$28.90	$34.00	$37.00	-18%	14%	15%	18%	9%
3.0-inch	$45.07	$33.20	$37.60	$43.20	$50.90	$55.30	-26%	13%	15%	18%	9%
4.0-inch	$63.03	$50.00	$57.00	$65.00	$77.00	$83.00	-21%	14%	14%	18%	8%
6.0-inch	$99.01	$96.00	$109.00	$125.00	$147.00	$160.00	-3%	14%	15%	18%	9%
8.0-inch	$152.96	$443.00	$503.00	$577.00	$680.00	$739.00	190%	14%	15%	18%	9%
10.0-inch	$179.83	$699.00	$793.00	$911.00	$1,073.00	$1,166.00	289%	13%	15%	18%	9%
12.0-inch	na	$919.00	$1,042.00	$1,197.00	$1,410.00	$1,533.00		13%	15%	18%	9%
Irrigation											
¾-inch	$10.03	$6.70	$7.60	$8.70	$10.30	$11.20	-33%	13%	14%	18%	9%
1.0-inch	$13.51	$8.40	$9.50	$10.90	$12.90	$14.00	-38%	13%	15%	18%	9%
1.5-inch	$18.89	$9.50	$10.80	$12.40	$14.60	$15.90	-50%	14%	15%	18%	9%
2.0-inch	$27.09	$15.20	$17.20	$19.70	$23.20	$25.30	-44%	13%	15%	18%	9%
3.0-inch	$45.07	$21.90	$24.80	$28.50	$33.60	$36.50	-51%	13%	15%	18%	9%
4.0-inch	$63.03	$32.00	$37.00	$42.00	$50.00	$54.00	-49%	16%	14%	19%	8%
6.0-inch	$99.01	$61.00	$69.00	$79.00	$93.00	$101.00	-38%	13%	14%	18%	9%
8.0-inch	$152.96	$274.00	$311.00	$357.00	$421.00	$457.00	79%	14%	15%	18%	9%
10.0-inch	$179.83	$432.00	$490.00	$562.00	$662.00	$720.00	140%	13%	15%	18%	9%
12.0-inch	na	$567.00	$643.00	$738.00	$869.00	$945.00		13%	15%	18%	9%
Private Fire Protection Charges, $/month											
Fire Hydrants	$23.94	$28.90	$32.70	$37.50	$44.10	$47.80	21%	13%	15%	18%	8%
Fire Service Connections											
1.0-inch	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50	-58%	13%	14%	18%	9%
1.5-inch	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50	-58%	13%	14%	18%	9%
2.0-inch	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50	-58%	13%	14%	18%	9%
2.5-inch	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50	-58%	13%	14%	18%	9%
4.0-inch	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50	-58%	13%	14%	18%	9%
6.0-inch	$35.94	$28.90	$32.70	$37.50	$44.10	$47.80	-20%	13%	15%	18%	8%
8.0-inch	$47.92	$62.00	$70.00	$80.00	$94.00	$102.00	29%	13%	14%	18%	9%
10.0-inch	$59.90	$111.00	$126.00	$144.00	$169.00	$184.00	85%	14%	14%	17%	9%
12.0-inch	$71.88	$179.00	$203.00	$232.00	$273.00	$296.00	149%	13%	14%	18%	8%

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Section 1
Introduction

This section describes the organization of the report, rate-making objectives, the rate-setting process, and a general description of the water system.

1.1 Organization of the Report

This report is divided into seven sections. This introduction provides an overview of the study objectives and description of the City's water system.

Section 2 discusses the water use characteristics of customers. The number, type and size of connections and water consumption projected for FY15 – FY19 is developed in this section.

Section 3 summarizes the five-year Financial Plan for the water enterprise and describes the development of revenue required from water rates.

Section 4 describes the allocation of revenue requirements to defined functional cost categories.

Section 5 describes the development of the water rate structure and water rates and charges.

Section 6 describes the impact of recommended water rates and charges upon customers.

Section 7 describes the limitations of the study document.

1.2 Rate-Making Objectives

There are numerous rate-making objectives that must be considered when developing rates and rate structures.

Revenue sufficiency. Generate sufficient revenue to fund operating costs, capital costs, bonded debt, and adequate reserves.

Revenue stability. Recover revenue from fixed and variable charges that will cover fixed and variable costs (barring water shortages when rationing may be required).

Conservation signal. Reward customers for efficient water use and discourage its waste.

Administrative ease and cost of implementation. Enable easy and cost efficient implementation and ongoing administration, including monitoring and updating.

Affordability. Be as affordable as possible while maintaining the utilities sound financial position and credit rating.

Customer acceptance. Be as simple as possible to facilitate customer understanding and acceptance.

Fairness. Provide for each customer class to pay its proportionate share of the required revenue in compliance with legal rate-making requirements.

Economic development. Rates must be competitive with local jurisdictions to retain and attract economic development.

Consideration of water intensive industries and users. Recognize that certain industries and users comprise a critical component of the local and regional community and their constant water demand patterns should be accommodated in the rate structure, not penalized.

1.3 Overview of Utility Rate Setting Process

Rate studies classically have three categories of technical analysis – the development of revenue required from rates, the allocation of costs among functional cost categories (cost-of-service analysis) and the design of a rate structure. An overview of the rate-setting analytical steps is shown in Figure 1-1.

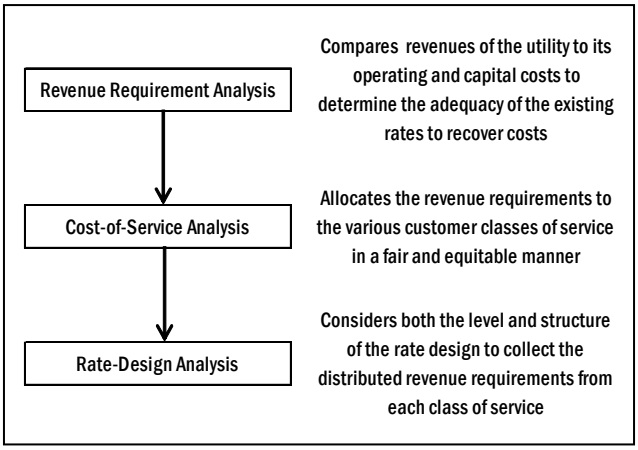

Figure 1-1. Overview of Rate Setting Analytical Steps

The revenue required from rates is net of non-rate revenues (for example interest earned on fund balances, loan disbursements, revenue from new connections to the water system, lease and rental income, various reimbursements, other charges for services). The allocation of costs is structured so that the revenue required from charges is distributed proportionally for every level of service in a manner that allows the development of unit costs. The rate structure uses the unit costs as a basis for aggregating costs into rates that are applicable to the various customer classes.

Information and data for the development of water rates and preparation of this report comes from a number of documents provided by the City. The list of documents, and the key information and data from each used in this study, are summarized below.

City of Fresno Fiscal Year 2014-15 Adopted Budget (FY15 Budget). The City of Fresno Annual Budget is the most important document the City produces. It outlines the City's spending plan and priorities for the coming fiscal year, which runs from July 1st to June 30th. Each year, the city's budget is developed in conjunction with the Mayor, City Manager and all city departments. The budget is then reviewed and approved by the City Council. The result is a budget that closely matches the community's highest priorities each fiscal year.

Revenue and expenditure data shown in the FY15 Budget for the Water Enterprise were significantly changed due to the City's decision to decrease water rates and charges to those shown in its Master Fee Schedule Amendment #483 as of July 2009 and its Master Fee Schedule Amendment #487 which assigned a quantity charge of $0.61 to Single Family Residential accounts effective March 1, 2010.

All revenue, expenditure and fund balance data used in the development of water rates and charges in this study were provided by the City.

Utility Billing System data. The City provided billing data from its Utility Billing system for all metered connections and all private fire service connections.

1.4 Fresno Water Utility

The original Fresno water system began in 1876 as a nonprofit organization established by a group of public-minded citizens. Initially, the water system consisted of one pumping station, composed of small pumps and two storage tanks located above the second floor of an early building, located on Fresno Street between "J" and "K" Streets, presently known as Broadway and Fulton.

By the late 1880's, the town had grown into a small city in need of an improved water distribution system, so in 1888, the first pumping station and water tower of a permanent nature were constructed at Fresno and "O" Streets. These facilities were designed to be an integral part of a larger and continually expanding water system. This first station was in continuous use until 1959, when it was retired, having served its purpose. Today, this building, which has since been declared a historical structure, is widely known throughout Fresno as the "Water Tower".

In 1926, the plant and distribution system was purchased by the California Water Service Company. In 1931, the company sold the water system to the City of Fresno, which operated as a municipal utility. It was first managed under an appointed water board, and is currently a Division of the Public Utilities Department. The Water Division manages and operates the City of Fresno's water system. The City delivers drinking water to about 500,000 urban residential, commercial, and industrial customers in over 114 square miles of the City, and many County Islands, within the City's Sphere of Influence.

Fresno's primary source of water is groundwater, coming from a natural underground basin, called an aquifer. Using approximately 260 wells, the Water Division pumps approximately 125 million gallons water per day (mgd). Peak water deliveries are much higher, topping 200 mgd. In addition to groundwater, the Fresno water supply is now supplemented with water delivered directly from the Sierra Nevada mountain range to the Northeast Surface Water Treatment Facility, which supplies about 20 million gallons of water per day.

1.5 Current Water Rates and Charges

The City's current water meter service rates (called a "Standby Charge" in the Master Fee Schedule), water use rates (called a "Quantity Charge" in the Master Fee Schedule), and private fire protection service rates (called "Fire Hydrant, on private property" and "Fire Protection Automatic Sprinkler Service" in the Master Fee Schedule) are shown in the adjacent sidebar.

Quantity Rates, $/HCF			
Single Family	$0.61	*All Others*	$0.745
Monthly Charges			
Meter Connections		*Private Fire Service Connections*	
¾-inch	$10.03	Fire Hydrants	$23.94
1.0-inch	$13.51	1.0-inch	$23.94
1.5-inch	$18.89	1.5-inch	$23.94
2.0-inch	$27.09	2.0-inch	$23.94
3.0-inch	$45.07	3.0-inch	$23.94
4.0-inch	$63.03	4.0-inch	$23.94
6.0-inch	$99.01	6.0-inch	$35.94
8.0-inch	$152.96	8.0-inch	$47.92
10.0-inch	$179.83	10.0-inch	$59.90
12.0-inch	no rate	12.0-inch	$71.88

Each water account has one or more meters or private fire protection connections. Each meter is billed for metered water use at the rates shown (except private fire protection accounts which have no water meter and are not billed for water use).

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Section 2

User Characteristics

The purpose of this section is to summarize use of the water system by all customers connected to the system. The data used in this section comes from the City's Utility Billing system. Customer data is used for the allocation of costs, development of rates and charges and analysis of the impact on customer bills.

2.1 Water Deliveries

Water delivery data for the 24 months ending June 2014 was evaluated to determine recent water conservation trends; identify annual, seasonal and daily water use patterns; and project water consumption for FY15 – FY19.

Historic water delivery data for FY13 and FY14 reflect a muted response to increases in water rates and charges implemented during those fiscal years and to water conservation messages provided by the City and California Legislature.

During FY13, the water rates and charges in effect were those from March 2010 (the Single Family quantity rate) and September 2008 (all other rates and charges). Water use during FY13 was not affected by awareness of the current drought and most Single Family accounts had metered connections for less than 24 months. Without a metered connection, a customer would have no knowledge of actual water use.

During FY14, water rates and charges were increased on September 17, 2013. Water bills reflecting increased rates and charges would have not been received until late October by which time nearly 40 percent of annual water use would have occurred. Customers also showed no signs of water conservation during spring 2014 as outdoor irrigation began to increase to levels measured during the previous Spring.

Water deliveries for Single Family accounts projected for FY15 – FY19 reflect an analysis of water delivery data for the 24 months ending June 2014 and incorporate estimates of conservation based on those developed in the 2013 Water Rate Study.

For FY15, a year in which increased water rates and charges are projected to be in effect for five months, average monthly Single Family water use is projected to be 20 HCF. For FY16, the projection is approximately 17 HCF. For FY17 and onward, annual conservation is projected at 2 percent per year.

For nonresidential accounts, projected water use for FY15 – FY19 is based on conservation of 6 percent during FY15 and 2 percent per year thereafter. For irrigation accounts, projected water use for FY15 – FY19 is based on conservation of 10 percent during FY15 and 2 percent per year thereafter.

Water use projections for each customer class are summarized in Table 2-1 and Figure 2-1.

Table 2-1. Metered Water Use by Customer Class

	Actual	Projected				
Customer Category	FY14	FY15	FY16	FY17	FY18	FY19
Water Use, HCF						
Single Family	32,200,000	26,360,000	22,420,000	22,000,000	21,580,000	21,160,000
Nonresidential	20,810,000	19,570,000	19,170,000	18,790,000	18,410,000	18,050,000
Irrigation	4,680,000	4,220,000	4,130,000	4,050,000	3,970,000	3,890,000
Total	57,690,000	50,150,000	45,720,000	44,840,000	43,960,000	43,100,000
Annual Change, HCF						
Single Family		(5,840,000)	(3,940,000)	(420,000)	(420,000)	(420,000)
Nonresidential		(1,240,000)	(400,000)	(380,000)	(380,000)	(360,000)
Irrigation		(460,000)	(90,000)	(80,000)	(80,000)	(80,000)
Total		(7,540,000)	(4,430,000)	(880,000)	(880,000)	(860,000)
Annual Change, Percent						
Single Family		-18.1%	-14.9%	-1.9%	-1.9%	-1.9%
Nonresidential		-6.0%	-2.0%	-2.0%	-2.0%	-2.0%
Irrigation		-9.8%	-2.1%	-1.9%	-2.0%	-2.0%
Total		-13.1%	-8.8%	-1.9%	-2.0%	-2.0%
Percent of Total						
Single Family	56%	53%	49%	49%	49%	49%
Nonresidential	36%	39%	42%	42%	42%	42%
Irrigation	8%	8%	9%	9%	9%	9%
Total	100%	100%	100%	100%	100%	100%

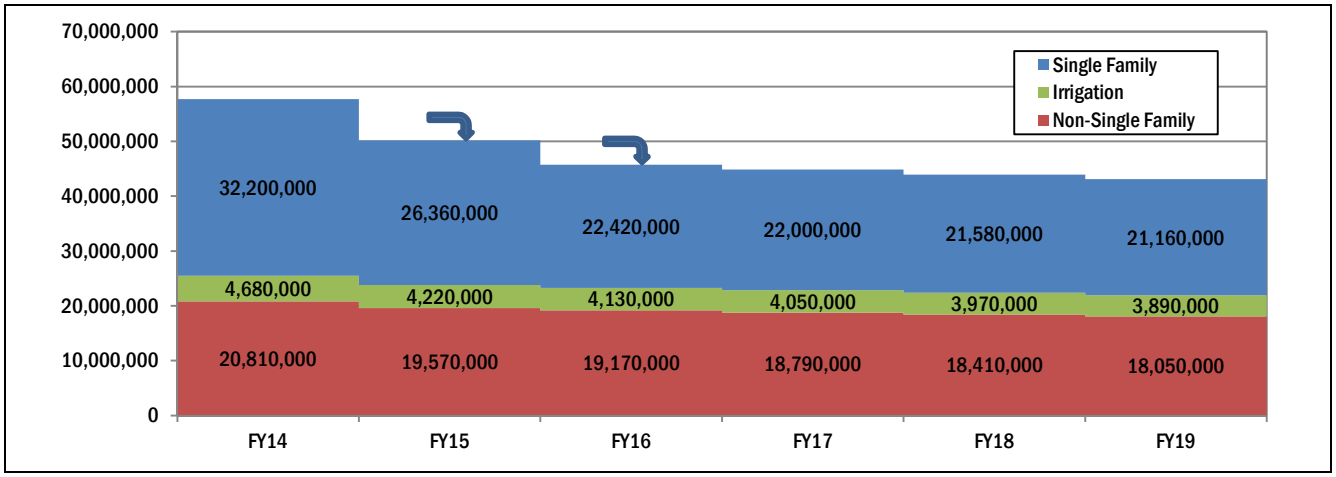

Figure 2-1. Metered Water Use by Customer Class

Monthly water use during FY14 and water use during a peak day on July 1, 2014 (Tuesday) for each customer class are shown in the pair of tables below.

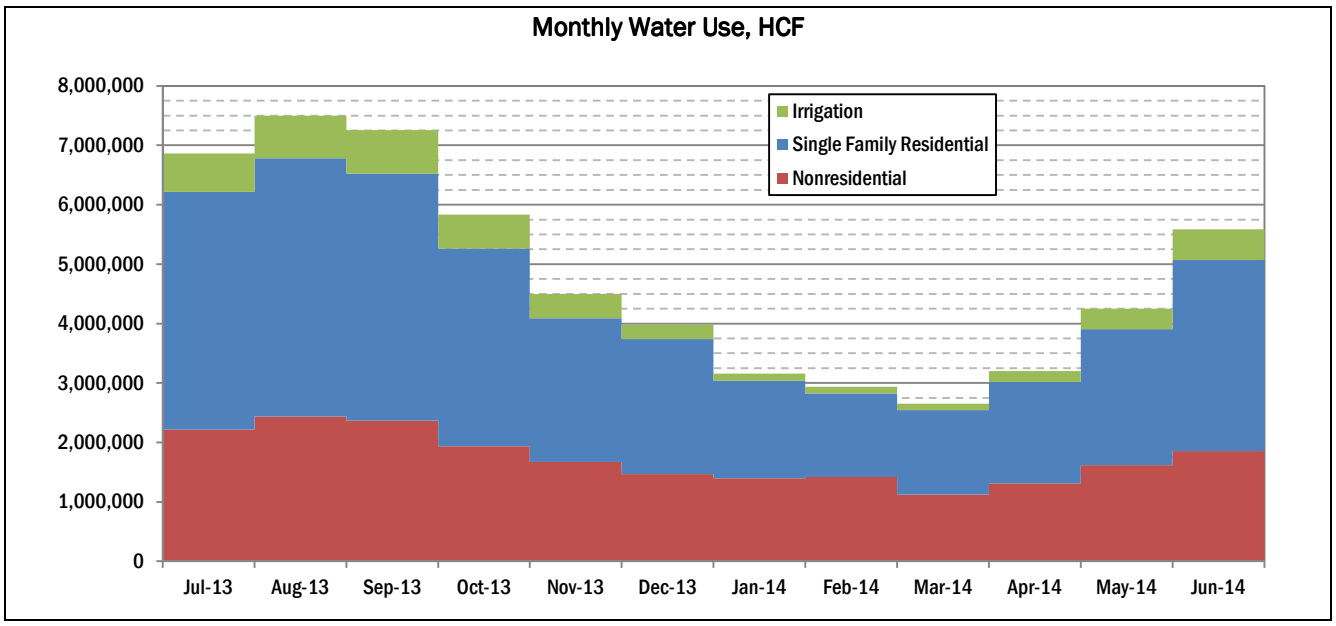

Figure 2-2. Water Use by Month

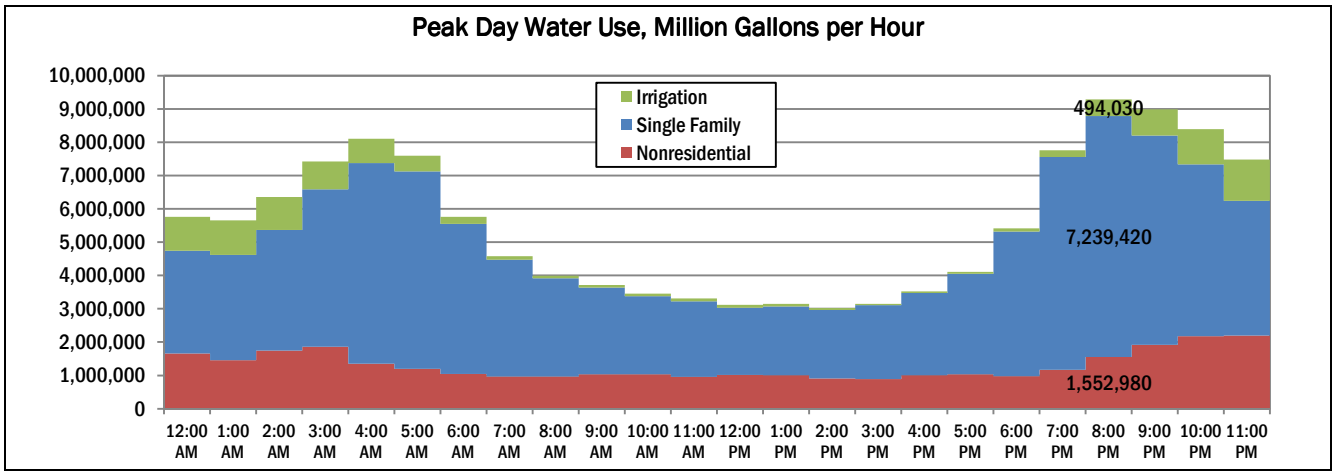

Figure 2-3. Peak Day Water Use

2.2 Evaluation of Water Use by Block for Single Family Residential

Annual average water use is commonly used as a break point for inclining block rate structures for single family residential accounts. An inclining block rate structure is a schedule of rates applicable to blocks of increasing usage in which the usage in each succeeding block is charged at a higher unit rate than in the previous blocks. In this study, a two-block structure, with the first block including water use equal to or below annual average water use, will be evaluated. Note that the terms "block" and "tier" will be used interchangeably.

Using a first block defined as water use less than or equal to 20 HCF, total water use in each block was calculated for the 12-month period ending June 2014. On an annual basis, the first block, Tier 1, contains approximately 62 percent of all water use. The next block, Tier 2, contains approximately 38 percent of all water use. Monthly water use in each tier is shown in the figure below.

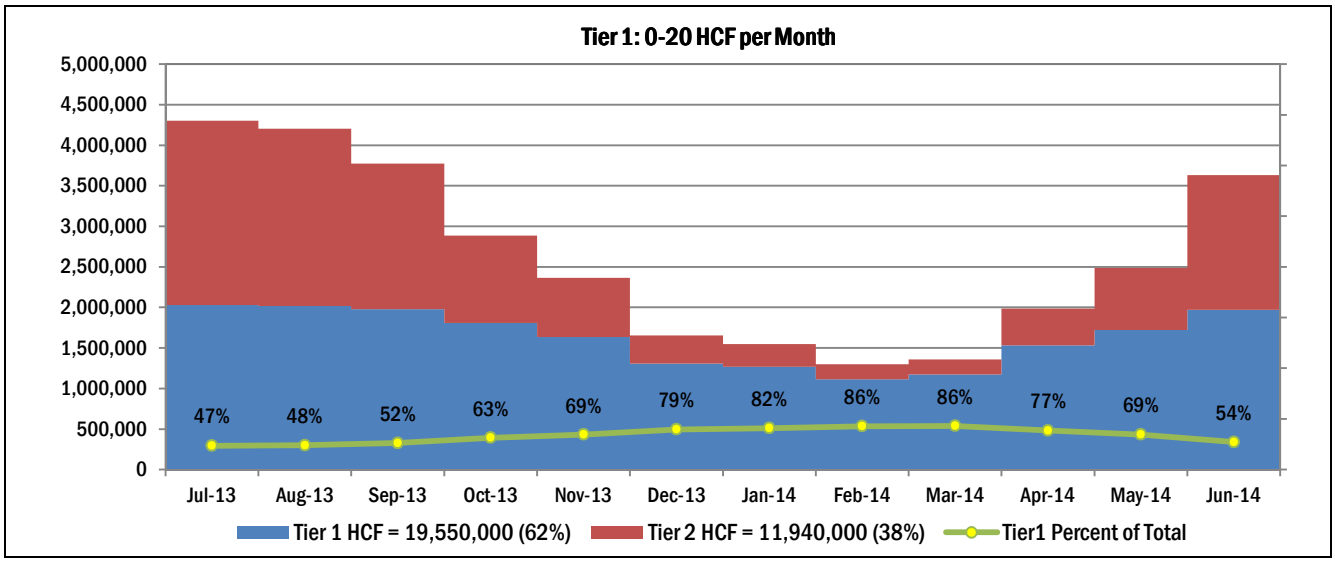

Figure 2-4. Single Family Residential Water Use by Month in Two Tiers

The percent of water use in Tier 1 (62%) and Tier 2 (38%) is projected to remain similar as conservation occurs over the five-year period.

The Tier 1/Tier 2 break is projected to decrease from 20 HCF in FY15 to 17 HCF in FY16 and FY17 and 16 HCF in FY 18 and FY19. The Tier 1/Tier 2 break tracks projected average annual water use for Single Family accounts.

2.3 Water Meter Equivalency Factors and Demand Factors

Meter charges for meter sizes greater than ¾-inch are based, in part, on an "equivalency factor" that relates the design maximum flow capacity of a meter (in gallons per minute, gpm) to that of a standard ¾-inch meter. The equivalency factors and maximum flow capacity used in this study are shown in the table below and are based on values published by the American Water Works Association (AWWA).[1]

Private Fire Protection charges for connections greater than 1-inch are based, in part, on a "demand factor" that relates the nominal size of the cross sectional area of the connection to that of a 1-inch connection. The demand factors used in this study are shown in the table below and are based on values published by the AWWA.[2]

Table 2-2. Water Meter Equivalency and Private Fire Protection Connection Demand Factors

Meter Size	Meter Types	AWWA Standard	Max Flow Rate	¾-inch Eq. Factor	Fire Connection Size	Demand Factor
¾-inch	Displacement	C700/C710	25 gpm	1.0	Hydrant	111.3
1.0-inch	Displacement	C700/C710	40 gpm	1.6	1.0-inch	1.0
1.5-inch	Displacement	C700/C710	50 gpm	2.0	1.5-inch	2.9
2.0-inch	Displacement	C700/C710	100 gpm	4.0	2.0-inch	6.2
3.0-inch	Single Jet	C712	160 gpm	6.4	3.0-inch	18.0
4.0-inch	Single Jet	C712	250 gpm	10.0	4.0-inch	38.3
6.0-inch	Single Jet	C712	500 gpm	20.0	6.0-inch	111.3
8.0-inch	Class II Turbine	C701	2,400 gpm	96.0	8.0-inch	237.2
10.0-inch	Class II Turbine	C701	3,800 gpm	152.0	10.0-inch	426.6
12.0-inch	Class II Turbine	C701	5,000 gpm	200.0	12.0-inch	689.0

[1] American Water Works Association (AWWA), Manual of Water Supply Practices, M6 Water Meters - Selection, Installation, Testing and Maintenance, 2012 Fifth Edition, pages 63 - 65.

[2] American Water Works Association (AWWA), Manual of Water Supply Practices, M1 Principles of Water Rates, Fees, and Charges, 2012 Fifth Edition, page 146. The demand factor or relative potential of the size of service or connection is derived based on the nominal size of the cross sectional area of the connection. The relative flow potential for various size pipes is dependent on the diameter raised to the 2.63 power.

2.4 Water Meters

The projected number of water meters, by size, was based on data from the City's utility billing system as of July 2014. Values from the utility billing system and projections for FY14 through FY19 are shown in the table below. The projected annual growth in accounts is conservatively estimated at less than one percent per year.

Table 2-3. Water Meters by Customer Class and Size

Customer Class and Size	July FY14	Projected [1] FY15	FY16	FY17	FY18	FY19
Single Family						
¾-inch	12,614	12,614	12,614	12,614	12,614	12,614
1.0-inch	92,174	92,274	92,374	92,474	92,574	92,674
1.5-inch	4,802	4,802	4,802	4,802	4,802	4,802
2.0-inch	134	134	134	134	134	134
3.0-inch	0	0	0	0	0	0
4.0-inch	1	1	1	1	1	1
6.0-inch						
Totals	109,725	109,825	109,925	110,025	110,125	110,225
Nonresidential						
¾-inch	4,544	4,544	4,544	4,544	4,544	4,544
1.0-inch	3,817	3,822	3,827	3,832	3,837	3,842
1.5-inch	3,047	3,047	3,047	3,047	3,047	3,047
2.0-inch	3,418	3,418	3,418	3,418	3,418	3,418
3.0-inch	138	138	138	138	138	138
4.0-inch	672	672	672	672	672	672
6.0-inch	384	384	384	384	384	384
Totals	16,020	16,025	16,030	16,035	16,040	16,045
Irrigation						
¾-inch	102	102	102	102	102	102
1.0-inch	956	966	976	986	996	1,006
1.5-inch	612	612	612	612	612	612
2.0-inch	1,533	1,533	1,533	1,533	1,533	1,533
3.0-inch	29	29	29	29	29	29
4.0-inch	105	105	105	105	105	105
6.0-inch	22	22	22	22	22	22
Totals	3,359	3,369	3,379	3,389	3,399	3,409
Summary						
Single Family	109,725	109,825	109,925	110,025	110,125	110,225
Nonresidential	16,020	16,025	16,030	16,035	16,040	16,045
Irrigation	3,359	3,369	3,379	3,389	3,399	3,409
Total	129,104	129,219	129,334	129,449	129,564	129,679

1 The number of new accounts per year are listed below. All new accounts are assigned the meter size shown. All values provided by the City.

	Meter	*FY15*	*FY16*	*FY17*	*FY18*	*FY19*
Single Family	*1.0-inch*	100	100	100	100	100
Nonresidential	*1.0-inch*	5	5	5	5	5
Irrigation	*1.0-inch*	10	10	10	10	10
Total		115	115	115	115	115

2.5 Private Fire Protection Connections

The projected number of Public fire hydrants and Private Fire Protection connections, by size, are shown in the table below. The number of connections was based on data from the City's utility billing system as of July 2014.

Table 2-4. Public Fire Hydrants and Private Fire Protection Connections

Connection Type	*Demand Factor*	July FY14	Projected [1] FY15	FY16	FY17	FY18	FY19
Public Fire Protection							
Fire Hydrants	*111.3*	13,139	13,179	13,219	13,259	13,299	13,339
Equivalent Connections		1,462,514	1,466,967	1,471,419	1,475,872	1,480,324	1,484,776
Private Fire Protection Service							
Fire Hydrants		721	726	728	730	732	734
Fire Service Connections							
1.0-inch		1	1	1	1	1	1
1.5-inch		2	2	2	2	2	2
2.0-inch		195	195	195	195	195	195
2.5-inch		2	2	2	2	2	2
4.0-inch		599	601	603	605	607	609
6.0-inch		988	990	992	994	996	998
8.0-inch		640	642	644	646	648	650
10.0-inch		72	72	72	72	72	72
12.0-inch		18	18	18	18	18	18
Totals		3,238	3,249	3,257	3,265	3,273	3,281
Equivalent Connections							
Fire Hydrant	*111.3*	80,255	80,812	81,034	81,257	81,480	81,702
Fire Service Connections							
1.0-inch	*38.3*	38	38	38	38	38	38
1.5-inch	*38.3*	77	77	77	77	77	77
2.0-inch	*38.3*	7,472	7,472	7,472	7,472	7,472	7,472
2.5-inch	*38.3*	77	77	77	77	77	77
4.0-inch	*38.3*	22,953	23,030	23,107	23,183	23,260	23,336
6.0-inch	*111.3*	109,975	110,198	110,420	110,643	110,866	111,088
8.0-inch	*237.2*	151,812	152,287	152,761	153,235	153,710	154,184
10.0-inch	*426.6*	30,714	30,714	30,714	30,714	30,714	30,714
12.0-inch	*689.0*	12,403	12,403	12,403	12,403	12,403	12,403
Totals		415,776	417,106	418,103	419,099	420,095	421,092
Summary							
Public Equivalent Connections			1,466,967	1,471,419	1,475,872	1,480,324	1,484,776
Private Equivalent Connections			417,106	418,103	419,099	420,095	421,092
Total			1,884,073	1,889,522	1,894,971	1,900,419	1,905,868

1 The number of new connections per year are listed below. All values provided by the City.

	FY15	*FY16*	*FY17*	*FY18*	*FY19*
Public Fire Hydrants	40	40	40	40	40
Private					
Fire Hydrants	5	5	5	5	5
Less than 3.0-inch	0	0	0	0	0
4.0-inch	2	2	2	2	2
6.0-inch	2	2	2	2	2
8.0-inch	2	2	2	2	2
10.0-inch	0	0	0	0	0
12.0-inch	0	0	0	0	0

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Section 3

Financial Plan and Revenue Requirements

Revenue from rates must be sufficient to meet the following financial planning criteria:

1. Provide funds for operating, capital and debt service expenditures;
2. Maintain annual fund balances that meet annual target fund balances;
3. Meet debt service coverage requirements;
4. Satisfy City Council rate increase goals; and
5. Meet legal requirements.

3.1 Projected Expenditures

The City provided a summary of annual operating and capital expenditures (pay-as-you-go and debt funded) and current and projected debt service payments. The data provided by the City is shown in Table A-1 in Appendix A. Total projected expenditures from FY15 – FY19 are projected to be approximately $501,600,000. Approximately 54% of total expenditures ($272,300,000) are for operations; the remaining is for pay-go capital expenditures ($88,600,000) and debt service ($140,700,000).

3.1.1 Operation and Maintenance

O&M expenditures include the cost of operating and maintaining water supply, treatment, storage, recharge and distribution facilities and administering a water conservation program. O&M expenditures also include the costs of providing technical services such as water quality testing services and other administrative costs of the water system such as meter reading and billings. These costs are a normal obligation of the system, and are met from operating revenues as they are incurred. They enable the City to deliver water that meets all current State and Federal quality mandates and to satisfy water supply needs for fire protection and residential, commercial, industrial, municipal, irrigation and institutional customers.

3.1.2 Capital Improvement Program

The City has developed a comprehensive Water Capital Improvement Program (CIP) to address current and future water system needs. Between FY15 and FY19, total projected CIP expenditures are approximately $429 million. The CIP expenditures are summarized in the following categories along with the total expenditures for each category:

- Intentional Groundwater Recharge - $6.4 million
- Raw Water Supply - $98.4 million
- Surface Water Treatment - $186.4 million
- Finished Water Distribution - $55.4 million
- Rehab/Replacement & System Upgrades - $82.5 million

The CIP is to be financed with a combination of pay-as-you-go (cash or pay-go) financing and debt financing. The CIP funding sources include the following:

1. "Pay-go" financing – Cash financing of capital improvements is the direct non-debt financing of Water System financed project costs. It is anticipated that cash financing will consist of revenues from the Water Enterprise Fund including customer service revenues, interest earnings, reimbursements, resources from prior year and other miscellaneous revenues.
2. Debt Financing – These consist of revenue bonds and low interest loans that are limited obligations of the City payable from revenues of the Water System after payment of operations and maintenance expenditures. The improvements to the Water System are anticipated to be debt funded through a series of three bond sales in Spring 2016, Fall 2016 and Fall 2017, and a loan from the State of California State Revolving Fund beginning in 2016.

Approximately 79% ($341 million) of the $429 million is projected to be funded by debt financing. The remaining expenditures are financed from "pay-go" revenues. Projected CIP expenditures funded by new debt financing and rates (pay-go) are shown in the figure below.

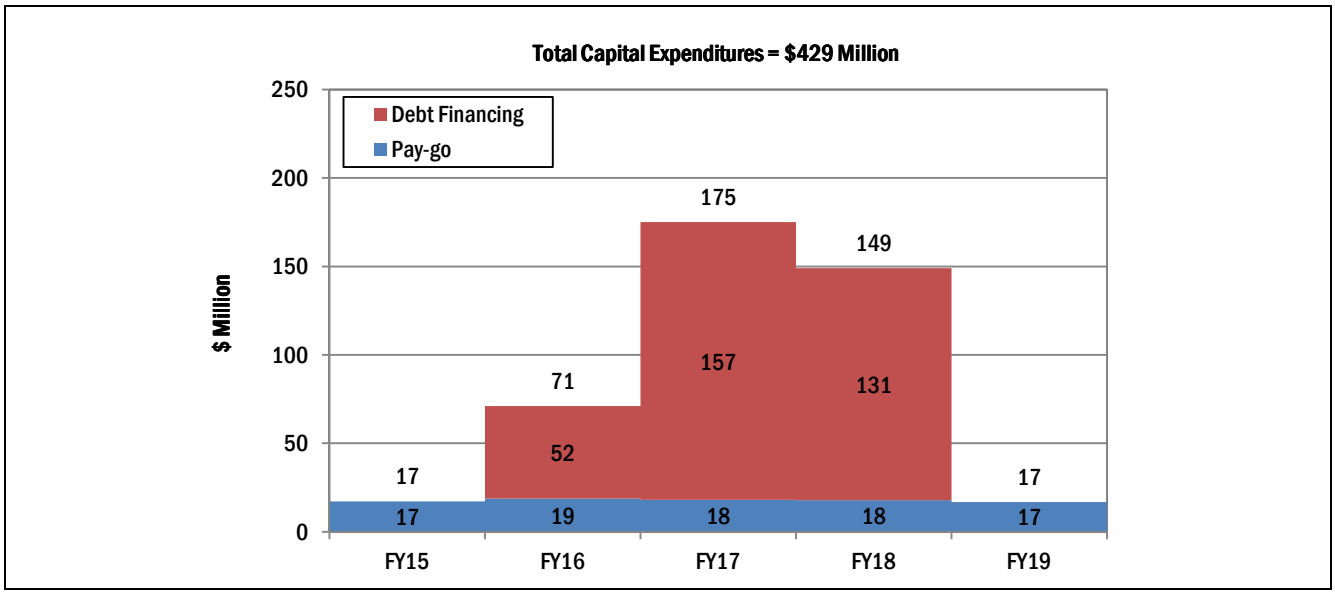

Figure 3-1. Projected Capital Expenditures, FY15 – FY19

The Division will continue to pursue grant and zero interest loan opportunities, but for purposes of this study, no revenues were assumed from these sources.

A summary of FY15 – FY19 annual operating expenditures, capital expenditures (pay-go) and debt service payments are shown in the figure below.

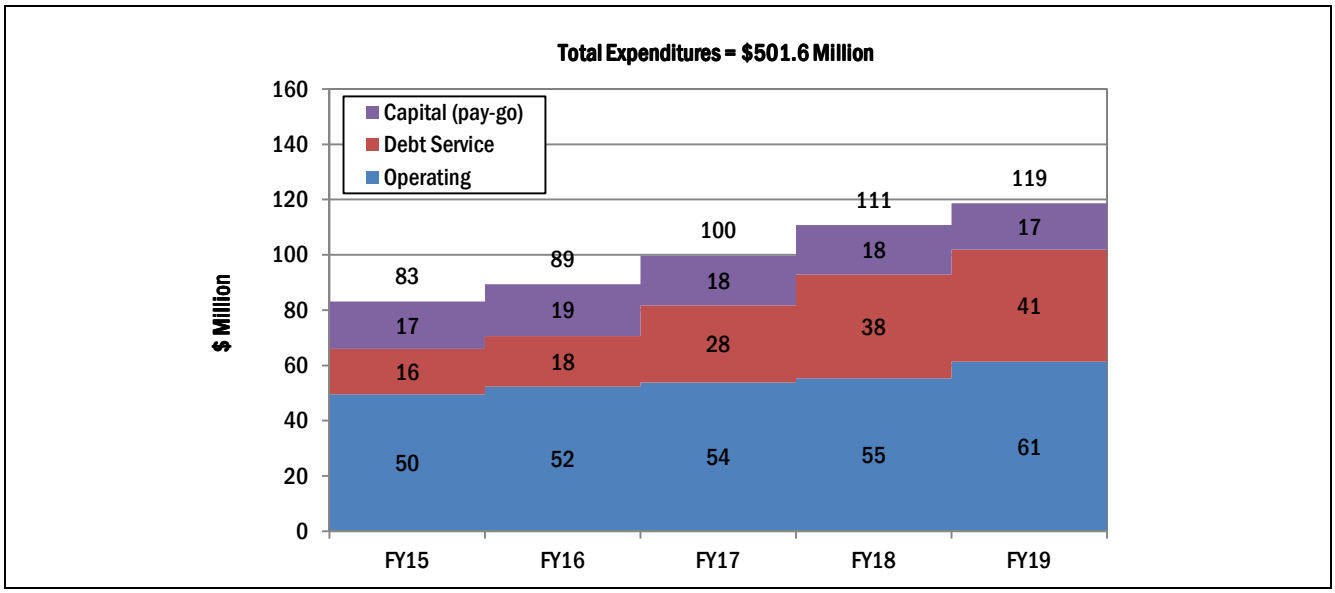

Figure 3-2. Projected Operating and Capital (Pay-go) Expenditures and Debt Service, FY15 – FY19

3.2 Annual Revenue Required from Rates and Charges

Projected expenditures may be funded from the use of the current fund balance; revenues from meter service charges, private fire protection charges, quantity charges; and other operating and nonoperating revenues. Revenues from meter service charges, private fire protection charges and quantity charges generate approximately 91% of all revenue for meeting the expenditures listed in the previous section.

The revenue projection for FY15 used in this study is based on the sum of actual revenues for July, August, September and October plus estimates of revenues for the remaining eight months. The revenue projection for FY15 could change depending on when the City adopts changes in water rates and charges.

Revenue required from rates and charges for FY15 – FY19 are shown in the table below. Revenues from rates and charges for FY14 are shown for comparison using a hypothetical scenario of actual water consumption and number of meters and connections paying the current (2008 and 2010 Single Family quantity charge) rates.

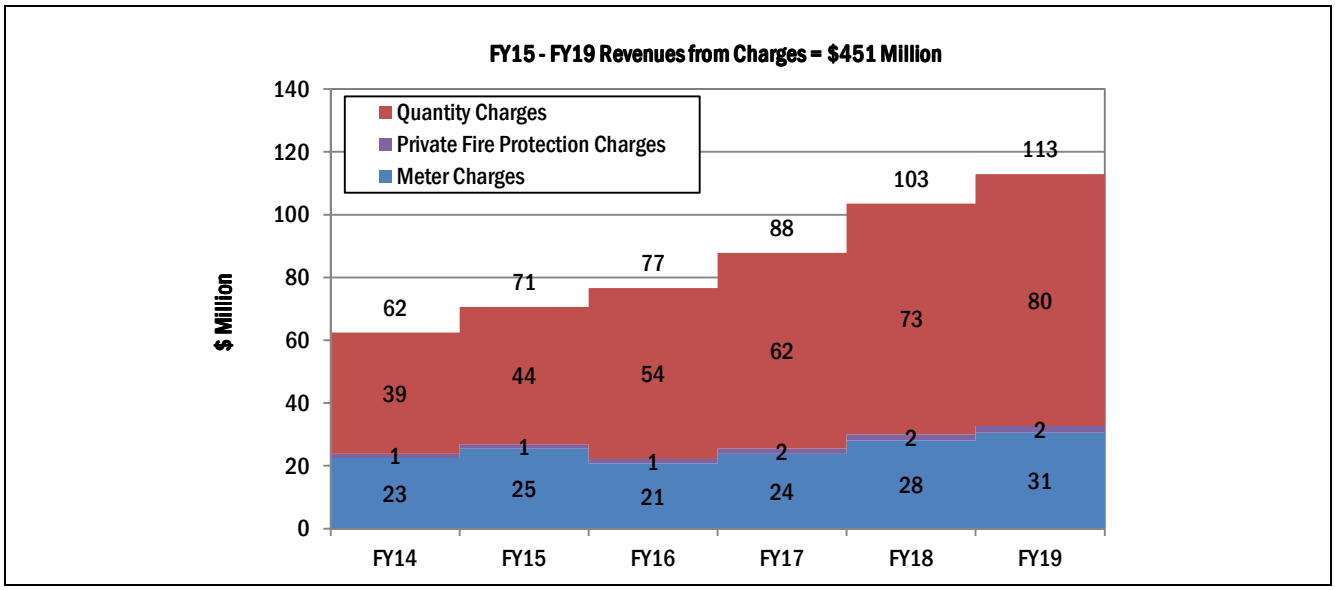

Figure 3-3. Projected Meter Service, Private Fire Protection and Quantity Charges, FY15 – FY19

3.3 Projected Cash Flow, Fund Balances and Debt Service Coverage

Revenues, expenditures and the beginning and ending fund balances for FY15 – FY19 are summarized in the table below. The debt service coverage ratio at the end of the five-year period is also shown.

Table 3-1. FY15 – FY19 Cash Flow

Beginning Cash, July 1, 2014	**$41,260,000**	
Revenues		
Private Fire Protection, Meter, and Quantity Charges	451,430,000	*91%*
Other Operating	27,600,000	*6%*
Non-operating	15,710,000	*3%*
Total Revenues	**494,740,000**	***100%***
Expenditures		
Operating	272,340,000	*54%*
Debt Service	140,650,000	*28%*
Capital (pay-go)	88,580,000	*18%*
Total Expenditures	**501,570,000**	***100%***
Net Revenues	(6,830,000)	
Ending Cash, June 30, 2019	**$34,430,000**	
June 30, 2019 Debt Service Coverage Ratio	**1.41x**	

3.4 Target Fund Balances, Debt Service Coverage and Cash Flow

Cash flow must be sufficient to provide funds for operating, capital and debt service expenditures; maintain annual fund balances that meet annual target fund balances; and meet debt service coverage requirements. The recommended rate increase scenario is discussed in the following sections.

3.4.1 Enterprise Fund Target Balance

A target fund balance (reserves) was developed for the enterprise fund. The fund balance should provide for levels of working capital that will enable the City to adjust to unexpected changes in accounts receivable from ratepayers and pay for unexpected increases in O&M expenses and emergency capital expenditures. The target fund balance developed by City staff is based on 180 days of annual operating expenditures. In FY 2019, 180 days of cash is estimated to equal approximately $30 million.

3.4.2 Debt Service Coverage Ratio

The City has multiple debt service obligations and four proposed debt service obligations starting in 2016. The loan agreement for each debt service obligation contains representations and warranties, covenants and default remedy provisions.

Water enterprise revenue bonds, for example, are secured by a lien upon and from, the revenues of the water enterprise. Commonly, an operating history of the enterprise or feasibility studies are used to determine that such revenues are sufficient to pay projected operation and maintenance expenses of the enterprise, debt service associated with the bonds and an additional amount known as coverage. Issuers of public enterprise revenue bonds generally covenant in the bond resolution or indenture to establish rates and charges for the products or services provided by the enterprise in a manner sufficient to provide revenues to pay such amounts and to provide coverage.

Section 5.12 of the City's 2003 Series A Water System Revenue Refunding Bonds Indenture states, "The City will fix, prescribe and collect rates, fees and charges for the Water System Service which are reasonable and fair and which will be at least sufficient to yield during each Fiscal Year (a) Net Current Revenues equal to at least one hundred percent (100%) of the estimated Debt Service for such Fiscal Year and (b) Net Revenues equal to at least one hundred and twenty-five percent (125%) of the estimated Debt Service for such Fiscal Year. The City may make adjustments from time to time in such rates, fees and charges and may make such classification thereof as it deems necessary, but shall not reduce the rates, fees and charges then in effect unless the Net Current Revenues and the Net Revenues from such reduced rates, fees and charges will at all times be sufficient to meet the requirements of this section."

By Policy, the minimum debt service coverage ratio used for development of water rates and charges shown this study is 1.40.

3.4.3 Cash Flow

Annual expenditures, revenues and cash flow, and the ending balance for the enterprise fund, are shown in the figure below. Also shown at the bottom line of the figure are the annual values of the debt service coverage ratio.

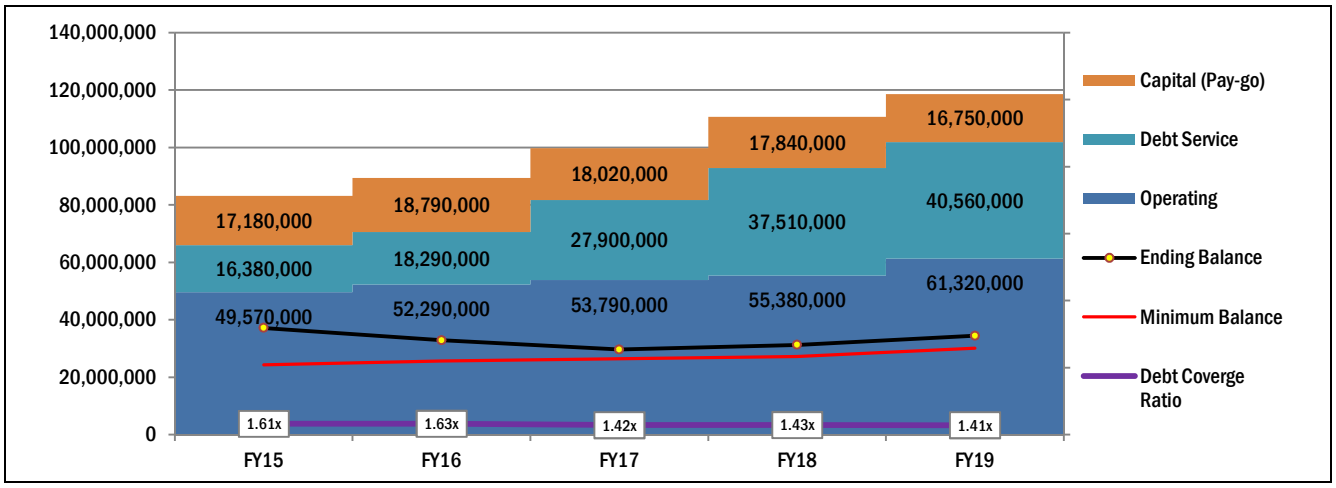

Figure 3-4. Cash Flow, Fund Balance and Debt Service Coverage, FY15 – FY19

Section 4

Cost of Service Analysis

The total amount of revenue required from water rates and charges (costs) is allocated between amounts to be recovered from meter service, private fire protection and quantity charges. Allocation is accomplished by the development of factors that allocate costs among six functional cost categories. The functional cost categories and the allocations are based on principles and methodology found in the American Water Works Association Manual of Water Supply Practices, *M1 Principles of Water Rates, Fees, and Charges*. The use of these industry standard principles and methods ensures that revenue requirements are equitably recovered from classes of customers in proportion to the cost of serving those customers.

The general cost of service process includes the following steps:

1. Identification of annual revenue requirements by function;
2. Allocation of functional costs to cost components (which may include annual water usage, peak water demand, customer meters and bills, and fire protection);
3. Development of units of service by customer class for each cost component;
4. Development of unit costs of service for each cost component; and
5. Distribution of costs to customer classes.

Annual revenues required from water rates and charges were identified in Section 3. Development of units of service by customer class for each cost component was presented in Section 2. Allocation of functional costs to cost components, development of unit costs of service, and distribution of costs to customer classes is presented in this section.

4.1 Base – Extra Capacity Cost Allocation

Allocation of functional costs to cost components is performed using the "base-extra capacity" method. Using this method, costs are separated into six cost components. Each component is described below.[3]

1. Base costs – costs that tend to vary with the total quantity of water used plus those O&M expenses and capital costs associated with service to customer under average demand conditions;
2. Extra-capacity costs – costs associated with meeting peak demand rate of use requirements in excess of average (base) use and include O&M expenses and capital costs for system capacity beyond that required average rate of use; these costs are subdivided into costs necessary to meet maximum-day extra demand and maximum-hour demand in excess of maximum-day demand;
3. Customer costs – costs associated with serving customers, irrespective of the amount or rate of water use; these costs are subdivided into costs for meter reading and billing, customer accounting and collection, and financial reporting; and maintenance and capital costs related to customer meters and services;
4. Fire protection – costs that apply solely to the fire protection function; these costs include those directly related to public fire hydrants and related branches and mains; and private fire protection costs.

[3] A more complete discussion of function cost categories as they apply to the base-extra capacity method may be found in the AWWA, Manual of Water Supply Practices, M1 Principles of Water Rates, Fees, and Charges, 2012 Fifth Edition, page 62.

4.2 Cost Allocation to Functional Categories

Cost allocation of most operating, debt service, and capital expenditures and other revenues (that are not revenues from meter, private fire protection or quantity charges) are based on the allocation of the replacement cost of water assets in service (Plant in Service assets). Allocation of the replacement cost of assets is shown in Table B-1 in Appendix B. The allocation of Plant in Service assets results in Plant in Service factors that are used to allocate most operating, debt service, and capital expenditures and other revenues among the six functional cost components.

Some operating expenditures and other revenues are allocated exclusively to one functional cost component based on the direct association between the cost category and its related function. For example, the cost category "Reimbursement of Overhead" is allocated solely to the "Billing and Collecting" function because overhead costs may be equitably allocated among all customers regardless of the amount of water use.

Other operating expenditures and other revenues not allocated using the Plant in Service factors or directly allocated are allocated using a subset of the Plant in Service factors that reflect the specific association between a cost category and its related functions. For example, the cost category "Pumping Power" is allocated only among the "Base", "Maximum Day" and "Maximum Hour" functions because power costs are predominantly related to the operation of pumps used to extract groundwater and move water through the water treatment, transmission and distribution system.

Allocation of operating, debt service, and capital expenditures and other revenues is shown in Table B-2 in Appendix B.

The allocation of annual revenue requirements to functional cost components is summarized in the table below.

Table 4-1. Cost Allocation to Functional Categories

		Quantity Charges			Meter and Private Fire Protection Charges		
			Extra Capacity				
	Revenue Requirements	Base (BAS)	Maximum Day (XMD)	Maximum Hour (XMH)	Fire Protection (FP)	Meters and Service Laterals (MTR)	Billing and Collecting (CUS)
FY15	67,300,000	30,435,256	6,118,490	11,231,293	5,866,788	7,651,664	5,996,508
		45.2%	9.1%	16.7%	8.7%	11.4%	8.9%
FY16	76,400,000	34,550,573	6,945,804	12,749,938	6,660,069	8,686,287	6,807,329
		45.2%	9.1%	16.7%	8.7%	11.4%	8.9%
FY17	87,800,000	39,706,025	7,982,220	14,652,415	7,653,849	9,982,409	7,823,082
		45.2%	9.1%	16.7%	8.7%	11.4%	8.9%
FY18	103,500,000	46,806,077	9,409,565	17,272,494	9,022,475	11,767,418	9,221,970
		45.2%	9.1%	16.7%	8.7%	11.4%	8.9%
FY19	112,600,000	50,921,394	10,236,879	18,791,139	9,815,756	12,802,041	10,032,791
		45.2%	9.1%	16.7%	8.7%	11.4%	8.9%

4.3 Allocation of Fire Protection Costs

The annual revenue requirements allocated to Fire Protection are split between public protection and private fire protection. The allocation is based on the units of service (equivalent connections) for fire protection presented in Section 2. Allocation of annual revenue requirements between public protection and private fire protection are shown in the table below.

Table 4-2. Allocation of Fire Protection Costs

Item	FY15	FY16	FY17	FY18	FY19
Equivalent Connections					
Public	1,466,967	1,471,419	1,475,872	1,480,324	1,484,776
Private	417,106	418,103	419,099	420,095	421,092
Total	1,884,073	1,889,522	1,894,971	1,900,419	1,905,868
% of Total Equivalent Connections					
Public	78%	78%	78%	78%	78%
Private	22%	22%	22%	22%	22%
Revenue Requirement					
Public	$4,567,967	$5,186,366	$5,961,094	$7,028,021	$7,647,016
Private	$1,298,822	$1,473,702	$1,692,755	$1,994,454	$2,168,740
Total	$5,866,788	$6,660,069	$7,653,849	$9,022,475	$9,815,756

4.4 Allocation of Base and Extra Capacity Costs

Allocation of annual revenue requirements for the “Base”, “Maximum Day” and “Maximum Hour” functions to the three customer classes is described in this subsection.

4.4.1 Base, Maximum Day and Maximum Hour Allocation Factors

Allocation of annual revenue requirements for the “Base”, “Maximum Day” and “Maximum Hour” functions is based on water use characteristics for each customer class presented in Section 2. Water use characteristics for each customer class for annual consumption are used to develop factors for allocation of “Base” costs. Water use characteristics for each customer class for maximum day consumption are used to develop factors for allocation of “Maximum Day” costs. Water use characteristics for each customer class for coincidental maximum hour consumption are used to develop factors for allocation of “Maximum Hour” costs. The factors are summarized in the table below.

Table 4-3. Factors for Development of Quantity Rates

	FY2014-15	Maximum Day, 07/01/14	
	Annual	Day	Hour, 8:00PM
Customer Category	MGD	MGD	MGD
Consumption			
Single Family	54,023,068	92,066,650	173,746,080
Nonresidential	40,100,707	31,114,390	37,271,520
Irrigation	8,639,975	9,968,070	11,856,720
Total Consumption	102,763,750	133,149,110	222,874,320
Factors for Development of Quantity Rates			
Single Family	**0.526**	**0.691**	**0.780**
Nonresidential	**0.390**	**0.234**	**0.167**
Irrigation	**0.084**	**0.075**	**0.053**

4.4.2 Base Cost Allocations

Water use characteristics for each customer class for annual consumption are used to develop factors for allocation of "Base" costs. The allocation of "Base" costs among customer classes is shown in the table below.

Table 4-4. Base Cost Allocations

Item	FY15	FY16	FY17	FY18	FY19
Revenue Requirements					
Base Allocations	$30,435,256	$34,550,573	$39,706,025	$46,806,077	$50,921,394
Allocations					
Single Family					
Allocation - All Classes	$30,435,256	$34,550,573	$39,706,025	$46,806,077	$50,921,394
Allocation Factor	0.526	0.526	0.526	0.526	0.526
Allocation Dollars	$15,999,863	$18,163,292	$20,873,521	$24,606,030	$26,769,458
Nonresidential					
Allocation - All Classes	$30,435,256	$34,550,573	$39,706,025	$46,806,077	$50,921,394
Allocation Factor	0.390	0.390	0.390	0.390	0.390
Allocation Dollars	$11,876,516	$13,482,404	$15,494,176	$18,264,775	$19,870,664
Irrigation					
Allocation - All Classes	$30,435,256	$34,550,573	$39,706,025	$46,806,077	$50,921,394
Allocation Factor	0.084	0.084	0.084	0.084	0.084
Allocation Dollars	$2,558,878	$2,904,877	$3,338,328	$3,935,272	$4,281,272

4.4.3 Maximum Day Cost Allocations

Water use characteristics for each customer class for annual consumption are used to develop factors for allocation of "Maximum Day" costs. The allocation of "Maximum Day" costs among customer classes is shown in the table below.

Table 4-5. Maximum Day Cost Allocations

Item	FY15	FY16	FY17	FY18	FY19
Revenue Requirements					
Maximum Day Allocations	$6,118,490	$6,945,804	$7,982,220	$9,409,565	$10,236,879
Allocations					
Single Family					
Allocation - All Classes	$6,118,490	$6,945,804	$7,982,220	$9,409,565	$10,236,879
Allocation Factor	0.691	0.691	0.691	0.691	0.691
Allocation Dollars	$4,230,662	$4,802,713	$5,519,348	$6,506,293	$7,078,344
Nonresidential					
Allocation - All Classes	$6,118,490	$6,945,804	$7,982,220	$9,409,565	$10,236,879
Allocation Factor	0.234	0.234	0.234	0.234	0.234
Allocation Dollars	$1,429,774	$1,623,101	$1,865,292	$2,198,835	$2,392,162
Irrigation					
Allocation - All Classes	$6,118,490	$6,945,804	$7,982,220	$9,409,565	$10,236,879
Allocation Factor	0.075	0.075	0.075	0.075	0.075
Allocation Dollars	$458,054	$519,990	$597,581	$704,437	$766,373

4.4.4 Maximum Hour Cost Allocations

Water use characteristics for each customer class for annual consumption are used to develop factors for allocation of "Maximum Hour" costs. The allocation of "Maximum Hour" costs among customer classes is shown in the table below.

Table 4-6. Maximum Hour Cost Allocations

Item	FY15	FY16	FY17	FY18	FY19
Revenue Requirements					
Maximum Hour Allocations	$11,231,293	$12,749,938	$14,652,415	$17,272,494	$18,791,139
Allocations					
Single Family					
Allocation - All Classes	$11,231,293	$12,749,938	$14,652,415	$17,272,494	$18,791,139
Allocation Factor	0.780	0.780	0.780	0.780	0.780
Allocation Dollars	$8,755,577	$9,939,466	$11,422,580	$13,465,114	$14,649,003
Nonresidential					
Allocation - All Classes	$11,231,293	$12,749,938	$14,652,415	$17,272,494	$18,791,139
Allocation Factor	0.167	0.167	0.167	0.167	0.167
Allocation Dollars	$1,878,222	$2,132,186	$2,450,340	$2,888,498	$3,142,463
Irrigation					
Allocation - All Classes	$11,231,293	$12,749,938	$14,652,415	$17,272,494	$18,791,139
Allocation Factor	0.053	0.053	0.053	0.053	0.053
Allocation Dollars	$597,495	$678,286	$779,496	$918,882	$999,672

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Section 5
Rate Analysis

Distribution of costs to functional categories and customer classes shown in the preceding section is followed by the calculation of rates and charges and design of a rates and charges structure.

5.1 Quantity Rates

Approximately 71 percent of annual revenue requirements are to be recovered from quantity rates based on allocations to the "Base", "Maximum Day" and "Maximum Hour" functions. Three quantity rate structures are considered:

- Single uniform quantity rate for all customer classes;
- Different uniform quantity rates for each customer class; and
- Different uniform quantity rates for Nonresidential and Irrigation customer classes and two-tier, inclining block quantity rates for the Single Family Residential customer class.

5.1.1 Single, Uniform Quantity Rate for All Customer Classes

The development of a single uniform quantity rate for all customer classes is shown in Table 5-1. The calculation involves adding the costs allocated to the "Base", "Maximum Day" and "Maximum Hour" functions and dividing by the projected annual amount of water use.

Table 5-1. Uniform Quantity Rates

Item		FY15	FY16	FY17	FY18	FY19
Allocations by Functional Cost Category						
Base		$30,435,256	$34,550,573	$39,706,025	$46,806,077	$50,921,394
Maximum Day		$6,118,490	$6,945,804	$7,982,220	$9,409,565	$10,236,879
Maximum Hour		$11,231,293	$12,749,938	$14,652,415	$17,272,494	$18,791,139
Total		$47,785,039	$54,246,315	$62,340,660	$73,488,136	$79,949,412
Allocations by Customer Class						
Single Family		$28,986,101	$32,905,470	$37,815,449	$44,577,437	$48,496,805
Nonresidential		$15,184,511	$17,237,691	$19,809,808	$23,352,108	$25,405,288
Irrigation		$3,614,427	$4,103,153	$4,715,404	$5,558,591	$6,047,318
Total		$47,785,039	$54,246,315	$62,340,660	$73,488,136	$79,949,412
Water Use, HCF						
Single Family		26,358,000	22,424,700	21,996,198	21,575,866	21,163,549
Nonresidential		19,565,243	19,173,938	18,790,459	18,414,650	18,046,357
Irrigation		4,215,467	4,131,158	4,048,535	3,967,564	3,888,213
Total		50,138,710	45,729,796	44,835,192	43,958,080	43,098,119
Uniform Quantity Charges	*Current*					
Single Family	**$0.61**	**$1.10**	**$1.47**	**$1.72**	**$2.07**	**$2.29**
Nonresidential	**$0.745**	**$0.78**	**$0.90**	**$1.05**	**$1.27**	**$1.41**
Irrigation	**$0.745**	**$0.86**	**$0.99**	**$1.16**	**$1.40**	**$1.56**
All Classes	**no data**	**$0.95**	**$1.19**	**$1.39**	**$1.67**	**$1.86**

5.1.2 Different, Uniform Quantity Rates for Each Customer Class

The development of a different uniform quantity rate for each customer class is shown in Table 5-1. The calculation involves adding the costs allocated to the "Base", "Maximum Day" and "Maximum Hour" functions for each customer class and dividing by the projected annual amount of water use for each customer class.

5.1.3 Uniform Rates for Nonresidential/Irrigation and Tiered Rates for Single Family

The development of two-tier, inclining block quantity rates for Single Family Residential accounts is shown in Table 5-2. Calculation of the Tier 1 rate involves recovering the "Base" costs from water use that is less than or equal to average annual water use for Single Family Residential accounts. Calculation of the Tier 2 rate involves recovering the "Maximum Day" and "Maximum Hour" costs from water use greater than average annual water use. Water use for the Tier 2 calculation is reduced by nine percent each year (non-cumulative) to account for an increased conservation response in that tier. The Tier 1/Tier 2 break declines over time to track the decline in average annual water use due to conservation.

Quantity rates for Nonresidential and Irrigation accounts are those developed for each of those two customer classes that reflect their unique "Base", "Maximum Day" and "Maximum Hour" water use patterns (see 5.1.2 Different, Uniform Quantity Rates for Each Customer Class).

Table 5-2. Uniform Rates for Nonresidential/Irrigation and Tiered Rates for Single Family

Item	FY15	FY16	FY17	FY18	FY19
Single Family Water Use, HCF					
Projected Average Annual Water Use	20.0	17.0	16.7	16.3	16.0
Inclining Block Tier 1 / Tier 2 Break	20 HCF	17 HCF	17 HCF	16 HCF	16 HCF
Annual Water Use, Percent					
Percent Less Than or Equal to Average (Tier 1)	69.0%	69.0%	69.0%	69.0%	69.0%
Percent Greater Average (Tier 2)	31.0%	31.0%	31.0%	31.0%	31.0%
Annual Water Use, HCF					
Total	*26,358,000*	*22,424,700*	*21,996,198*	*21,575,866*	*21,163,549*
Tier 1	18,187,020	15,473,043	15,177,377	14,887,348	14,602,849
Tier 2					
Use Without Inclining Blocks	8,170,980	6,951,657	6,818,821	6,688,519	6,560,700
% Reduction in Use	9%	9%	9%	9%	9%
Use With Inclining Blocks	7,435,592	6,326,008	6,205,127	6,086,552	5,970,237
Single Family Revenue Requirements					
Base Allocation	$15,999,863	$18,163,292	$20,873,521	$24,606,030	$26,769,458
Maximum Day Allocation	$4,230,662	$4,802,713	$5,519,348	$6,506,293	$7,078,344
Maximum Hour Allocation	$8,755,577	$9,939,466	$11,422,580	$13,465,114	$14,649,003
Total	$28,986,101	$32,905,470	$37,815,449	$44,577,437	$48,496,805
Inclining Block Quantity Charges					
Tier 1 (Base Allocations)					
Dollar Allocation	$15,999,863	$18,163,292	$20,873,521	$24,606,030	$26,769,458
Single Family Water Use in Tier 1	18,187,020	15,473,043	15,177,377	14,887,348	14,602,849
Tier 1 Quantity Charge	**$0.88**	**$1.17**	**$1.38**	**$1.65**	**$1.83**
Tier 2 (Max Day + Max Hour Allocations)					
Dollar Allocation	$12,986,238	$14,742,179	$16,941,928	$19,971,407	$21,727,347
Single Family Water Use in Tier 2	7,435,592	6,326,008	6,205,127	6,086,552	5,970,237
Tier 2 Quantity Charge	**$1.75**	**$2.33**	**$2.73**	**$3.28**	**$3.64**

5.1.4 Meter Service Charges

Approximately 29 percent of annual revenue requirements are to be recovered from meter charges based on allocations to the "Fire Protection", "Customer (uniform for each account)" and "Customer (vary by meter size)" functions. The development of unit costs for each functional category is shown in the table below. Note that the Fire Protection functional cost category includes only the portion for public fire protection; the portion for private fire protection is recovered from a separate charge (the allocation between public and private fire protection was developed in the previous section).

Table 5-3. Unit Costs for Development of Meter Service Charges

Item	FY15	FY16	FY17	FY18	FY19
Allocations by Functional Cost Category					
Fire Protection Service	$4,567,967	$5,186,366	$5,961,094	$7,028,021	$7,647,016
Meters and Laterals	$7,651,664	$8,686,287	$9,982,409	$11,767,418	$12,802,041
Billing and Collection	$5,996,508	$6,807,329	$7,823,082	$9,221,970	$10,032,791
Unit Costs					
Fire Protection Service	$4,567,967	$5,186,366	$5,961,094	$7,028,021	$7,647,016
Equivalent ¾-inch Meters	216,111	216,279	216,447	216,615	216,783
Cost per Equivalent ¾-inch Meters	$1.76	$2.00	$2.30	$2.70	$2.94
Meters and Laterals	$7,651,664	$8,686,287	$9,982,409	$11,767,418	$12,802,041
Equivalent ¾-inch Meters	226,790	226,974	227,158	227,342	227,526
Cost per Equivalent ¾-inch Meters	$2.81	$3.19	$3.66	$4.31	$4.69
Billing and Collection	$5,996,508	$6,807,329	$7,823,082	$9,221,970	$10,032,791
Meters	129,219	129,334	129,449	129,564	129,679
Cost per Meter	$3.87	$4.39	$5.04	$5.93	$6.45

Unit costs are used to develop meter charges for each customer class. There are some important assumptions made in the calculation of meter service charges that change the meter service charge structure for each customer class. Those assumptions are listed below:

- Single Family Residential and Nonresidential meter service charges include the "Fire Protection", "Customer (uniform for each account)" and "Customer (vary by meter size)" functional cost categories;
- Irrigation meter service charges include the "Customer (uniform for each account)" and "Customer (vary by meter size)" functional cost categories and exclude the "Fire Protection" functional cost category (a new assumption not reflected in the current charges);
- Travel meter charges are assigned the 3-inch meter rated capacity.

The development of meter service charges is shown in the table below.

Table 5-4. Meter Service Charges

Item			FY15	FY16	FY17	FY18	FY19
Unit Costs							
Fire Protection Service			$1.76	$2.00	$2.30	$2.70	$2.94
Meters and Laterals			$2.81	$3.19	$3.66	$4.31	$4.69
Billing and Collection			$3.87	$4.39	$5.04	$5.93	$6.45
Meter Charges, $/month		*Current*					
All x/Irrigation	*¾-inch Eq Mtr*	*(2010)*					
¾-inch	*1.0*	$10.03	$8.50	$9.60	$11.00	$13.00	$14.10
1.0-inch	*1.6*	$13.51	$11.20	$12.70	$14.60	$17.20	$18.70
1.5-inch	*2.0*	$18.89	$13.10	$14.80	$17.00	$20.00	$21.80
2.0-inch	*4.0*	$27.09	$22.20	$25.20	$28.90	$34.00	$37.00
3.0-inch	*6.4*	$45.07	$33.20	$37.60	$43.20	$50.90	$55.30
4.0-inch	*10.0*	$63.03	$50.00	$57.00	$65.00	$77.00	$83.00
6.0-inch	*20.0*	$99.01	$96.00	$109.00	$125.00	$147.00	$160.00
8.0-inch	*96.0*	$152.96	$443.00	$503.00	$577.00	$680.00	$739.00
10.0-inch	*152.0*	$179.83	$699.00	$793.00	$911.00	$1,073.00	$1,166.00
12.0-inch	*200.0*		$919.00	$1,042.00	$1,197.00	$1,410.00	$1,533.00
Irrigation	*¾-inch Eq Mtr*						
¾-inch	*1.0*	$10.03	$6.70	$7.60	$8.70	$10.30	$11.20
1.0-inch	*1.6*	$13.51	$8.40	$9.50	$10.90	$12.90	$14.00
1.5-inch	*2.0*	$18.89	$9.50	$10.80	$12.40	$14.60	$15.90
2.0-inch	*4.0*	$27.09	$15.20	$17.20	$19.70	$23.20	$25.30
3.0-inch	*6.4*	$45.07	$21.90	$24.80	$28.50	$33.60	$36.50
4.0-inch	*10.0*	$63.03	$32.00	$37.00	$42.00	$50.00	$54.00
6.0-inch	*20.0*	$99.01	$61.00	$69.00	$79.00	$93.00	$101.00
8.0-inch	*96.0*	$152.96	$274.00	$311.00	$357.00	$421.00	$457.00
10.0-inch	*152.0*	$179.83	$432.00	$490.00	$562.00	$662.00	$720.00
12.0-inch	*200.0*		$567.00	$643.00	$738.00	$869.00	$945.00

5.1.5 Private Fire Protection Charges

The development of Private Fire Protection charges is shown in the table below. Note that the Fire Protection functional cost category includes only the portion for private fire protection; the portion for public fire protection is recovered from a separate charge (the allocation between public and private fire protection was developed in the previous section).

Table 5-5. Private Fire Protection Charges

Item		Current (2010)	FY15	FY16	FY17	FY18	FY19
Private Fire Protection Service Allocation			$1,298,822	$1,473,702	$1,692,755	$1,994,454	$2,168,740
Private Fire Service Equivalent Connections			417,106	418,103	419,099	420,095	421,092
Unit Cost per Equivalent Connection, $/month			$0.26	$0.29	$0.34	$0.40	$0.43
	Demand	*Current*					
Rate per Connection, $/month	*Factor*	*(2010)*					
Fire Hydrants	*111.3*	$23.94	$28.90	$32.70	$37.50	$44.10	$47.80
Fire Service Connections							
1.0-inch	*38.3*	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50
1.5-inch	*38.3*	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50
2.0-inch	*38.3*	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50
2.5-inch	*38.3*	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50
4.0-inch	*38.3*	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50
6.0-inch	*111.3*	$35.94	$28.90	$32.70	$37.50	$44.10	$47.80
8.0-inch	*237.2*	$47.92	$62.00	$70.00	$80.00	$94.00	$102.00
10.0-inch	*426.6*	$59.90	$111.00	$126.00	$144.00	$169.00	$184.00
12.0-inch	*689.0*	$71.88	$179.00	$203.00	$232.00	$273.00	$296.00

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Section 6

Revenues, Rates and Customer Bills

The impact on customers is summarized in terms of annual changes in revenue required from each customer class, annual changes in water rates and charges, and annual changes in monthly bills.

6.1 Projected Revenue from Water Rates and Charges

The total amount of revenue projected from charges (for a full fiscal year), by customer class and type of charge, is summarized in Table 6-1. Note that the revenues shown for FY14 are developed using 2010 rates for the entire fiscal year and revenues shown for FY15 are developed using the recommended rates for the entire fiscal year. Those assumptions underestimate revenues in both fiscal years by approximately the same amount. Also note that projected water use for FY15 is substantially less than for FY14.

Table 6-1. Revenue from Projected Charges

Revenue Category	FY14 using 2010 Rates	FY15 Recommended for 12-months	FY16	FY17	FY18	FY19
All Classes						
Quantity Charges	$38,640,000	$47,630,000	$54,420,000	$62,320,000	$73,410,000	$80,160,000
Meter Charges	$22,530,000	$18,270,000	$20,720,000	$23,820,000	$28,090,000	$30,560,000
Private Fire Protection Service	$1,300,000	$1,300,000	$1,480,000	$1,700,000	$2,000,000	$2,170,000
Total	$62,470,000	$67,200,000	$76,620,000	$87,840,000	$103,500,000	$112,890,000
Annual Change						
Dollar Change		$4,730,000	$9,420,000	$11,220,000	$15,660,000	$9,390,000
Percent Change		12%	21%	15%	18%	9%
Rates and Charges						
Quantity Charges	62%	71%	71%	71%	71%	71%
Meter Charges	36%	27%	27%	27%	27%	27%
Private Fire Protection Service	2%	2%	2%	2%	2%	2%
Total	100%	100%	100%	100%	100%	100%
Customer Category						
Single Family	60%	59%	56%	56%	56%	56%
Nonresidential	31%	33%	35%	35%	35%	35%
Irrigation	7%	7%	7%	7%	7%	7%
Private Fire Protection Service	2%	2%	2%	2%	2%	2%
Total	100%	100%	100%	100%	100%	100%

Note that the cost of service analysis results in a shift in cost recovery to quantity-related costs from those costs related to accounts and meters (meter charges). The shift, which occurs in the first year of implementation of cost of service rates and charges, increases cost recovery from quantity-related costs from 62 percent in FY14 to 71 percent in FY15. All other things being equal, the shift will cause the percentage increase in quantity rates to exceed the percentage increase in meter charges.

6.2 Projected Water Rates and Charges

Projected rates and charges are shown in the table below. The effective date for FY15 is approximate; the effective date for subsequent fiscal years is July 1.

Table 6-2. Current and Projected Water Rates and Charges, FY 15 – FY 19

	effective dates >	*3/12/2015*	*7/1/2015*	*7/1/2016*	*7/1/2017*	*7/1/2018*
tem	Current	FY15	FY16	FY17	FY18	FY19
)uantity Rates, $/HCF						
Single Family	$0.610	$0.95	$1.19	$1.39	$1.67	$1.86
All Others	$0.745	$0.95	$1.19	$1.39	$1.67	$1.86
Meter Charges, $/month						
Domestic						
¾-inch	$10.03	$8.50	$9.60	$11.00	$13.00	$14.10
1.0-inch	$13.51	$11.20	$12.70	$14.60	$17.20	$18.70
1.5-inch	$18.89	$13.10	$14.80	$17.00	$20.00	$21.80
2.0-inch	$27.09	$22.20	$25.20	$28.90	$34.00	$37.00
3.0-inch	$45.07	$33.20	$37.60	$43.20	$50.90	$55.30
4.0-inch	$63.03	$50.00	$57.00	$65.00	$77.00	$83.00
6.0-inch	$99.01	$96.00	$109.00	$125.00	$147.00	$160.00
8.0-inch	$152.96	$443.00	$503.00	$577.00	$680.00	$739.00
10.0-inch	$179.83	$699.00	$793.00	$911.00	$1,073.00	$1,166.00
12.0-inch	na	$919.00	$1,042.00	$1,197.00	$1,410.00	$1,533.00
Irrigation						
¾-inch	$10.03	$6.70	$7.60	$8.70	$10.30	$11.20
1.0-inch	$13.51	$8.40	$9.50	$10.90	$12.90	$14.00
1.5-inch	$18.89	$9.50	$10.80	$12.40	$14.60	$15.90
2.0-inch	$27.09	$15.20	$17.20	$19.70	$23.20	$25.30
3.0-inch	$45.07	$21.90	$24.80	$28.50	$33.60	$36.50
4.0-inch	$63.03	$32.00	$37.00	$42.00	$50.00	$54.00
6.0-inch	$99.01	$61.00	$69.00	$79.00	$93.00	$101.00
8.0-inch	$152.96	$274.00	$311.00	$357.00	$421.00	$457.00
10.0-inch	$179.83	$432.00	$490.00	$562.00	$662.00	$720.00
12.0-inch	na	$567.00	$643.00	$738.00	$869.00	$945.00
Private Fire Protection Service Charges, $/month						
Fire Hydrants	$23.94	$28.90	$32.70	$37.50	$44.10	$47.80
Fire Service Connections						
1.0-inch	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50
1.5-inch	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50
2.0-inch	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50
2.5-inch	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50
4.0-inch	$23.94	$10.00	$11.30	$12.90	$15.20	$16.50
6.0-inch	$35.94	$28.90	$32.70	$37.50	$44.10	$47.80
8.0-inch	$47.92	$62.00	$70.00	$80.00	$94.00	$102.00
10.0-inch	$59.90	$111.00	$126.00	$144.00	$169.00	$184.00
12.0-inch	$71.88	$179.00	$203.00	$232.00	$273.00	$296.00

6.3 Impact on Single Family Residential Monthly Bills

The impact on residential bills varies depending on the quantity rate structure (uniform for all users; uniform for each customer class; or two-tier, inclining block) and the amount of water use.[4]

The shift in cost recovery to quantity-related costs from those costs related to accounts and meters (meter charges) will cause customers (regardless of customer class) with relatively low levels of water use to experience lower increases (or even decreases) in their monthly bills compared to customers within the same customer class with average water use.

By the same token, the shift in cost recovery to quantity-related costs will cause customers (regardless of customer class) with relatively high levels of water use to experience higher increases in their monthly bills compared to customers within the same customer class with average water use.

[4] In FY14, average annual water use for Single Family Residential accounts was approximately 24 HCF. The first three months of FY15 data suggest the annual average may decrease to 20 HCF. Projected annual average water use in FY19 is 16 HCF.

6.3.1 Monthly Bills for Each Quantity Rate Structure

Monthly bills for a Single Family Residential account with a 1-inch meter are compared in the tables below using projected water rates and charges for each quantity rate structure for FY15, FY16 and FY17. Note the impact on customers with lower and higher levels of water use. The series of tables shows the impact that reduction in water use in FY15 and FY16 has upon the quantity rate, and subsequently, monthly bills. For FY17 onward, reduction in water use is lower and has a smaller impact on customer bills.

Table 6-3. Single Family Residential Monthly Bills, Current vs FY15 Projected

HCF	Water Use gallons	gpd	Current 2010	2-Tier Inclining Block	Uniform System	Uniform Class	2-Tier Inclining Block	Uniform System	Uniform Class
0	0	0	$13.51	$11.20	$11.20	$11.20	-17%	-17%	-17%
5	3,700	125	$16.56	$15.60	$15.95	$16.70	-6%	-4%	1%
10	7,500	245	$19.61	$20.00	$20.70	$22.20	2%	6%	13%
15	11,200	370	$22.66	$24.40	$25.45	$27.70	8%	12%	22%
20	15,000	490	$25.71	$30.54	$30.20	$33.20	19%	17%	29%
25	18,700	615	$28.76	$39.29	$34.95	$38.70	37%	22%	35%
30	22,400	740	$31.81	$48.04	$39.70	$44.20	51%	25%	39%
35	26,200	860	$34.86	$56.79	$44.45	$49.70	63%	28%	43%
40	29,900	980	$37.91	$65.54	$49.20	$55.20	73%	30%	46%
45	33,700	1,110	$40.96	$74.29	$53.95	$60.70	81%	32%	48%
50	37,400	1,230	$44.01	$83.04	$58.70	$66.20	89%	33%	50%

Table 6-4. Single Family Residential Monthly Bills, FY15 Projected vs FY16 Projected

HCF	Water Use gallons	gpd	2-Tier Inclining Block	Uniform System	Uniform Class	2-Tier Inclining Block	Uniform System	Uniform Class
0	0	0	$12.70	$12.70	$12.70	13%	13%	13%
5	3,700	125	$18.55	$18.65	$20.05	19%	17%	20%
10	7,500	245	$24.40	$24.60	$27.40	22%	19%	23%
15	11,200	370	$30.25	$30.55	$34.75	24%	20%	25%
20	15,000	490	$38.42	$36.50	$42.10	26%	21%	27%
25	18,700	615	$50.07	$42.45	$49.45	27%	21%	28%
30	22,400	740	$61.72	$48.40	$56.80	28%	22%	29%
35	26,200	860	$73.37	$54.35	$64.15	29%	22%	29%
40	29,900	980	$85.02	$60.30	$71.50	30%	23%	30%
45	33,700	1,110	$96.67	$66.25	$78.85	30%	23%	30%
50	37,400	1,230	$108.32	$72.20	$86.20	30%	23%	30%

Table 6-5. Single Family Residential Monthly Bills, FY16 Projected vs FY17 Projected

HCF	Water Use gallons	gpd	2-Tier Inclining Block	Uniform System	Uniform Class	2-Tier Inclining Block	Uniform System	Uniform Class
0	0	0	$14.60	$14.60	$14.60	15%	15%	15%
5	3,700	125	$21.50	$21.55	$23.20	16%	16%	16%
10	7,500	245	$28.40	$28.50	$31.80	16%	16%	16%
15	11,200	370	$35.30	$35.45	$40.40	17%	16%	16%
20	15,000	490	$44.90	$42.40	$49.00	17%	16%	16%
25	18,700	615	$58.55	$49.35	$57.60	17%	16%	16%
30	22,400	740	$72.20	$56.30	$66.20	17%	16%	17%
35	26,200	860	$85.85	$63.25	$74.80	17%	16%	17%
40	29,900	980	$99.50	$70.20	$83.40	17%	16%	17%
45	33,700	1,110	$113.15	$77.15	$92.00	17%	16%	17%
50	37,400	1,230	$126.80	$84.10	$100.60	17%	16%	17%

6.3.2 Historical and Projected Single Family Monthly Bills

Projected monthly bills for single family accounts with a metered connection (a 1-inch meter with 18 HCF/month average annual use) and historic monthly bills for an unmetered connection (with an 8000 sq. ft. lot) and metered connections are compared in the figure below.

Historic monthly bills for metered connections are based on rates adopted during March 2010. Monthly bills based on rates adopted during August 2013 (but now rescinded) are also shown.

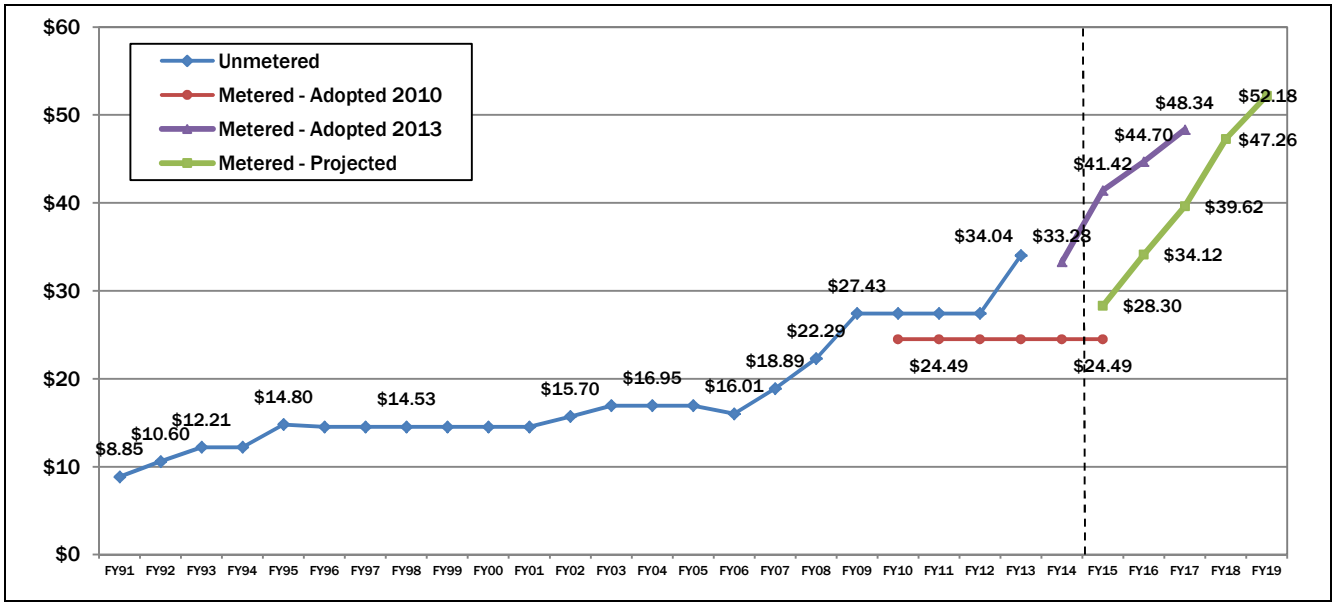

Figure 6-1. Historical and Projected Single Family Monthly Bills

6.4 Impact on Nonresidential Monthly Bills

Monthly bills for a Nonresidential accounts with a 1-inch meter are compared in the tables below using projected water rates and charges for each quantity rate structure for FY15, FY16 and FY17. Note the impact on customers with lower and higher levels of water use. The series of tables shows the impact that reduction in water use in FY15 and FY16 has upon the quantity rate, and subsequently, monthly bills. For FY17 onward, reduction in water use is lower and has a smaller impact on customer bills.

Table 6-6. Nonresidential Monthly Bills, Current vs FY15 Projected

	Water Use		Current	Uniform	Uniform	Uniform	Uniform
HCF	gallons	gpd	2010	System	Class	System	Class
0	0	0	$13.51	$11.20	$11.20	-17%	-17%
5	3,700	125	$17.24	$15.95	$15.10	-7%	-12%
10	7,500	245	$20.96	$20.70	$19.00	-1%	-9%
15	11,200	370	$24.69	$25.45	$22.90	3%	-7%
20	15,000	490	$28.41	$30.20	$26.80	6%	-6%
25	18,700	615	$32.14	$34.95	$30.70	9%	-4%
30	22,400	740	$35.86	$39.70	$34.60	11%	-4%
35	26,200	860	$39.59	$44.45	$38.50	12%	-3%
40	29,900	980	$43.31	$49.20	$42.40	14%	-2%
45	33,700	1,110	$47.04	$53.95	$46.30	15%	-2%
50	37,400	1,230	$50.76	$58.70	$50.20	16%	-1%

Table 6-7. Nonresidential Monthly Bills, FY15 Projected vs FY16 Projected

	Water Use		Uniform	Uniform	Uniform	Uniform
HCF	gallons	gpd	System	Class	System	Class
0	0	0	$12.70	$12.70	13%	13%
5	3,700	125	$18.65	$17.20	17%	14%
10	7,500	245	$24.60	$21.70	19%	14%
15	11,200	370	$30.55	$26.20	20%	14%
20	15,000	490	$36.50	$30.70	21%	15%
25	18,700	615	$42.45	$35.20	21%	15%
30	22,400	740	$48.40	$39.70	22%	15%
35	26,200	860	$54.35	$44.20	22%	15%
40	29,900	980	$60.30	$48.70	23%	15%
45	33,700	1,110	$66.25	$53.20	23%	15%
50	37,400	1,230	$72.20	$57.70	23%	15%

Table 6-8. Nonresidential Monthly Bills, FY16 Projected vs FY17 Projected

	Water Use		Uniform	Uniform	Uniform	Uniform
HCF	gallons	gpd	System	Class	System	Class
0	0	0	$14.60	$14.60	15%	15%
5	3,700	125	$21.55	$19.85	16%	15%
10	7,500	245	$28.50	$25.10	16%	16%
15	11,200	370	$35.45	$30.35	16%	16%
20	15,000	490	$42.40	$35.60	16%	16%
25	18,700	615	$49.35	$40.85	16%	16%
30	22,400	740	$56.30	$46.10	16%	16%
35	26,200	860	$63.25	$51.35	16%	16%
40	29,900	980	$70.20	$56.60	16%	16%
45	33,700	1,110	$77.15	$61.85	16%	16%
50	37,400	1,230	$84.10	$67.10	16%	16%

Section 7

Limitations

This document was prepared solely for City of Fresno in accordance with professional standards at the time the services were performed and in accordance with the contract between City of Fresno and Municipal Financial Services dated August 20, 2014. This document is governed by the specific scope of work authorized by City of Fresno; it is not intended to be relied upon by any other party. We have relied on information or instructions provided by City of Fresno and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

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Appendix A: Projected Revenues and Expenditures

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Table A-1
Projected Expenditures, Revenues and Cash Flow

	FY15	FY16	FY17	FY18	FY19	Totals FY15-FY19
Operating Revenues						
Fire Service, Meter and Quantity Charges	67,200,000	76,620,000	87,840,000	103,500,000	112,900,000	451,430,000
Adjustment for mid-year rate changes	*3,370,000*	*0*	*0*	*0*	*0*	
Backflow Prevention Program Charges	286,000	288,900	291,800	294,700	297,600	1,459,000
Other Charges for Services	3,025,400	3,038,800	3,135,600	3,235,700	3,270,900	15,706,400
Interest Income--Enterprise Fund	141,500	100,000	101,000	102,000	103,000	547,500
Federal Reimbursement - BABS	1,978,300	1,978,300	1,978,300	1,978,300	1,978,300	9,891,500
Transfers from Rate Stabilization Fund	0	0	0	0	0	0
Total Operating Revenues	**76,001,200**	**82,026,000**	**93,346,700**	**109,110,700**	**118,549,800**	**479,034,400**
Operating Expenditures						
Labor and Benefits	14,481,300	14,770,900	15,066,300	15,367,600	15,518,300	75,204,400
Pumping Power	10,378,400	10,689,800	11,010,500	11,340,800	10,340,800	53,760,300
Source of Supply	5,732,700	7,004,000	7,141,600	7,335,100	7,355,800	34,569,200
Chemicals	2,462,600	2,536,500	2,612,600	2,691,000	2,771,700	13,074,400
Fleet Services & Maintenance	2,813,200	2,897,600	2,984,500	3,074,000	3,166,200	14,935,500
Reimbursment of Overhead	1,591,600	1,639,300	1,688,500	1,739,200	1,791,400	8,450,000
UB&C ID Charges	1,757,800	1,810,500	1,864,800	1,920,700	1,978,300	9,332,100
Fire Hydrant Inspection and Maintenance	619,000	637,600	656,700	676,400	696,700	3,286,400
DPU Admin	673,700	693,900	714,700	736,100	758,200	3,576,600
Additional SE SWTF O&M Costs	0	0	0	0	6,000,000	6,000,000
All Other O&M	8,859,300	9,134,300	9,417,300	9,708,500	9,998,100	47,117,500
Additional Operating Expenses	0	281,100	435,000	589,100	743,300	2,048,500
Total Operating Expenditures	**49,369,600**	**52,095,500**	**53,592,500**	**55,178,500**	**61,118,800**	**271,354,900**
Other Loan Payments (Non-debt service)	197,700	197,700	197,700	197,700	197,700	988,500
Total Expenditures	**49,567,300**	**52,293,200**	**53,790,200**	**55,376,200**	**61,316,500**	**272,343,400**
Net Operating Revenues	**26,433,900**	**29,732,800**	**39,556,500**	**53,734,500**	**57,233,300**	**206,691,000**
Debt Service						
2003 Water Remediation Bonds	1,374,400	1,374,400	1,374,400	1,374,400	1,374,400	6,872,000
2010 Water Revenue Bonds A-1	6,412,000	6,434,000	6,410,600	6,411,600	6,434,000	32,102,200
2010 Water Revenue Bonds A-2	6,097,300	6,097,300	6,097,300	6,097,300	6,097,300	30,486,500
Prop 44 Loan Repayment #1	0	0	0	0	0	0
Prop 82 Loan Repayment	120,000	120,000	0	0	0	240,000
SDWSRF Loan Repayment (CL2 Buildings)	122,000	122,000	122,000	122,000	122,000	610,000
SDWSRF Loan Repayment (Enterprise Canal)	78,000	78,000	78,000	78,000	78,000	390,000
SRF Loan for Residential Meter Retrofit	2,570,200	2,570,200	2,570,200	2,570,200	2,570,200	12,851,000
SRF Loan for SE SWTF	0	0	0	0	3,045,560	3,045,560
2016 Water Revenue Bonds	0	1,931,049	3,862,099	3,862,099	3,862,099	13,517,346
2017 Water Revenue Bonds	0	0	7,907,611	7,907,611	7,907,611	23,722,833
2018 Water Revenue Bonds	0	0	0	9,704,007	9,704,007	19,408,015
2019 Bonds Water Revenue Bonds	0	0	0	0	0	0
2020 Bonds Water Revenue Bonds	0	0	0	0	0	0
Less: 2010 Bonds Reserve Fund Interest	(392,900)	(392,900)	(392,900)	(392,900)	(392,900)	(1,964,500)
Less: Projected Reserve Fund Interest	0	(44,900)	(126,900)	(223,700)	(240,100)	(635,600)
Total Debt Service	**16,381,000**	**18,289,149**	**27,902,410**	**37,510,617**	**40,562,177**	**140,645,354**
Enterprise Net Income (net of Debt Service)	**10,052,900**	**11,443,651**	**11,654,090**	**16,223,883**	**16,671,123**	**66,045,646**
Reserve Fund Balance (Unrestricted Reserve) and Target						
Previous Ending Balance	41,255,500	37,152,881	32,842,900	29,614,499	31,237,114	
Enterprise Net Income	10,052,900	11,443,651	11,654,090	16,223,883	16,671,123	66,045,646
Plus: Non-operating Revenue	**3,025,400**	**3,038,800**	**3,135,600**	**3,235,700**	**3,270,900**	**15,706,400**
Plus: Transfers from Rate Stabilization Fund	0	0	0	0	0	0
Less: Enterprise Funded CIP	**(17,180,919)**	**(18,792,432)**	**(18,018,091)**	**(17,836,967)**	**(16,748,663)**	**(88,577,072)**
Less: Miscellaneous Transfers In/(Out)	0	0	0	0	0	0
Ending Enterprise Fund Balance	**37,152,881**	**32,842,900**	**29,614,499**	**31,237,114**	**34,430,474**	

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Appendix B: Water "Plant in Service Factors" and Allocation of Costs

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Table B-1
Plant in Service Allocation

Plant Assets [1]	Valuation, Dollars	Useful Life, Years	Capital Recovery Expense [2] Dollars	Cost Allocation, Dollars: Base (BAS)	Extra Capacity: Maximum Day (XMD)	Extra Capacity: Maximum Hour (XMH)	Fire Protection (FP)	Meters and Service Laterals (MTR)	Billing and Collection (CUS)	Basis of Allocation [3,4,5.6,7]: (BAS)	(XMD)	(XMH)	(FP)	(MTR)	(CUS)
Land	74,212,000		3,710,600	2,806,544	829,844	0	74,212	0	0	75.6	22.4	0	2.0	0	0
Water Rights	15,663,100		783,155	0	0	0	0	783,155	0	0	0	0	0	100	0
Well Sites	133,368,032	50	7,305,465	5,525,552	1,633,804	0	146,109	0	0	75.6	22.4	0	2.0	0	0
Leaky Acres Recharge	518,797	50	28,418	21,494	6,355	0	568	0	0	75.6	22.4	0	2.0	0	0
Buildings/Structures	5,487,280	50	300,575	88,153	26,065	0	6,012	180,345	0	29.3	8.7	0	2.0	60	0
NESWTF	42,691,571	55	2,291,123	1,591,448	470,562	0	0	0	229,112	69.5	20.5	0	0	0	10
Tank 1 & 2	5,481,087	55	294,153	113,210	33,474	98,846	48,623	0	0	38.5	11.4	33.6	16.5	0	0
Tank 3	5,502,454	50	301,406	116,001	34,300	101,283	49,822	0	0	38.5	11.4	33.6	16.5	0	0
Tank 4	10,089,000	50	552,642	212,694	62,890	185,708	91,351	0	0	38.5	11.4	33.6	16.5	0	0
Nonresidential Meters	37,013,188	25	2,626,177	0	0	0	0	2,626,177	0	0	0	0	0	100	0
Irrigation Meters	1,365,756	25	96,904	0	0	0	0	96,904	0	0	0	0	0	100	0
Single Family Meters	76,829,572	25	5,451,247	0	0	0	0	5,451,247	0	0	0	0	0	100	0
Services	150,785,742	50	8,259,551	0	0	0	0	8,259,551	0	0	0	0	0	100	0
W/H Physical Inventory	1,655,000	50	90,655	0	0	0	0	90,655	0	0	0	0	0	100	0
Hydrants	38,489,408	50	2,108,324	0	0	0	2,108,324	0	0	0	0	0	100	0	0
Valves	52,285,738	50	2,864,042	1,102,276	325,923	962,420	473,423	0	0	38.5	11.4	33.6	16.5	0	0
Sample Points	478,534	20	38,399	14,778	4,370	12,903	6,347	0	0	38.5	11.4	33.6	16.5	0	0
Transmission Lines	778,184,814	55	41,762,738	16,073,107	4,752,524	14,033,771	6,903,337	0	0	38.5	11.4	33.6	16.5	0	0
Distribution Lines 8"	509,357,255	55	27,335,606	10,520,578	3,110,742	9,185,739	4,518,547	0	0	38.5	11.4	33.6	16.5	0	0
Distribution Lines LT 8"	382,017,000	55	20,501,654	15,823,064	4,678,590	0	0	0	0	77.2	22.8	0	0	0	0
Blowoffs	1,080,801	50	59,203	22,785	6,737	19,894	9,786	0	0	38.5	11.4	33.6	16.5	0	0
SCADA	1,247,948	10	161,615	62,200	18,391	54,308	26,715	0	0	38.5	11.4	33.6	16.5	0	0
Furniture	116,801	15	11,253	4,796	1,418	2,186	1,282	1,550	20	42.6	12.6	19.4	11.4	13.8	0.18
Tools & Equipment	4,228,758	10	547,644	233,401	69,013	106,380	62,405	75,456	989	42.6	12.6	19.4	11.4	13.8	0.18
Total	2,328,149,636		127,482,550	54,332,082	16,065,002	24,763,439	14,526,864	17,565,041	230,121						
Percent of Total				42.6%	12.6%	19.4%	11.4%	13.8%	0.18%						

1 The list of Plant Assets, valuations and useful lives were provided by the City.

2 The Capital Recovery Expense calculated using an interest rate of > 5.0%

3 Fire Protection allocation for Wells Sites, Buildings/Structures and Leaky Acres Recharges is based on the volume of water used for public and private fire protection.

4 Fire Protection allocation for Tanks, Valves, Sample Points, Transmission Lines, Distribution Lines, Blowoffs and SCADA is calculated as shown below:

Fire Demand = $1{,}020\ x^{1/2}\ (1 - 0.01x^{1/2})$ where x = population in thousands; x = 550 for Fresno Service Area

Fire Demand = 18,311 gpm

Maximum Day Demand = 133.1 mgd

Maximum Day Demand = 92,465 gpm

Fire Protection Allocation = 18,311 / (18,311 + 92,465)

Fire Protection Allocation = 17%

5 Base (BAS) and Maximum Day (XMD) allocations for Water Treatment facilities are calculated as shown below:

Average Day Demand = 102.8 mgd

Maximum Day Demand = 133.1 mgd

$$\text{Base Allocation} = \frac{102.8}{133.1} = 77.2\%$$

$$\text{Maximum Day Allocation} = \frac{133.1 - 102.8}{133.1} = 22.8\%$$

6 Base (BAS), Maximum Day (XMD) and Maximum Hour (XMH) allocations for Tanks, Valves, Sample Points, Transmission Lines, Distribution Lines, Blowoffs and SCADA are calculated as shown below. When Fire Protection allocation is incorporated, the remaining asset value is allocated using the BAS, XMH and XMD values.

Average Day Demand = 102.8 mgd

Maximum Day Demand = 133.1 mgd

Maximum Hour Demand = 222.9 mgd

$$\text{Base Allocation} = \frac{102.8}{222.9} = 46.1\%$$

$$\text{Maximum Day Allocation} = \frac{133.1 - 102.8}{222.9} = 13.6\%$$

$$\text{Maximum Hour Allocation} = \frac{222.9 - 133.1}{222.9} = 40.3\%$$

7 Allocation of Land, Water Rights, Furniture and Tools & Equipment are based on a composite of all other assets.

All Other Assets Capital Recovery Expense	Cost Allocation, Dollars: Base (BAS)	Extra Capacity: Maximum Day (XMD)	Extra Capacity: Maximum Hour (XMH)	Fire Protection (FP)	Meters and Service Laterals (MTR)	Billing and Collection (CUS)	Composite Allocation (%): (BAS)	(XMD)	(XMH)	(FP)	(MTR)	(CUS)
126,923,653	54,093,885	15,994,572	24,654,873	14,463,177	17,488,034	229,112	42.6	12.6	19.4	11.4	13.8	0.2

Table B-2
Cost Allocation Factors

		Quantity Charges			Meter and Private Fire Protection Charges			
			Extra Capacity					
	FY15	Base (BAS)	Maximum Day (XMD)	Maximum Hour (XMH)	Fire Protection (FP)	Meters & Service Laterals (MTR)	Billing and Collecting (CUS)	Basis of Allocation [1]
Operating Revenues								
Fire Service, Meter and Quantity Charges								
Less: effective less than full FY								
Backflow Prevention Program Charges	286,000	0	0	0	0	0	286,000	Customer
Other Charges for Services	3,025,400	1,289,402	381,253	587,683	344,750	416,851	5,461	Plant In Service
Interest Income--Enterprise Fund	141,500	60,306	17,831	27,486	16,124	19,496	255	Plant In Service
Federal Reimbursement - BABS	1,978,300	843,136	249,300	384,284	225,431	272,578	3,571	Plant In Service
Transfers from Rate Stabilization Fund	0	0	0	0	0	0	0	Plant In Service
Total Operating Revenues	**5,431,200**	**2,192,845**	**648,384**	**999,453**	**586,305**	**708,926**	**295,288**	
Operating Expenditures								
Labor and Benefits	14,481,300	10,809,700	0	0	1,650,170	1,995,290	26,140	System Operations
Pumping Power	10,378,400	4,785,313	1,414,929	4,178,158	0	0	0	Base/Max Day/Max Hr/Fire
Source of Supply	5,732,700	2,443,233	722,419	1,113,575	653,251	789,874	10,348	Plant In Service
Chemicals	2,462,600	1,049,541	310,330	478,359	280,618	339,307	4,445	Plant In Service
Fleet Services & Maintenance	2,813,200	0	0	0	0	0	2,813,200	Customer
Reimbursment of Overhead	1,591,600	0	0	0	0	0	1,591,600	Customer
UB&C ID Charges	1,757,800	0	0	0	0	0	1,757,800	Customer
Fire Hydrant Inspection and Maintenance	619,000	0	0	0	0	619,000	0	Fire Protection
DPU Admin	673,700	0	0	0	0	0	673,700	Customer
Additional SE SWTF O&M Costs	0	0	0	0	0	0	0	Plant In Service
All Other O&M	8,859,300	3,775,766	1,116,425	1,720,916	1,009,533	1,220,669	15,992	Plant In Service
Additional Operating Expenses	0							
Total Operating Expenditures	**49,369,600**	**22,863,552**	**3,564,103**	**7,491,008**	**3,593,572**	**4,964,139**	**6,893,226**	
Other Loan Payments (Non-debt service)	197,700	84,258	24,914	38,403	22,528	27,240	357	Plant In Service
Total Expenditures	**49,567,300**	**22,947,810**	**3,589,017**	**7,529,411**	**3,616,100**	**4,991,379**	**6,893,583**	
Net Operating Revenues	**-44,136,100**	**-20,754,965**	**-2,940,633**	**-6,529,958**	**-3,029,796**	**-4,282,453**	**-6,598,295**	
Debt Service								
2003 Water Remediation Bonds	1,374,400	585,759	173,198	266,977	156,615	189,370	2,481	Plant In Service
2010 Water Revenue Bonds A-1	6,412,000	2,732,745	808,023	1,245,529	730,659	883,470	11,574	Plant In Service
2010 Water Revenue Bonds A-2	6,097,300	2,598,622	768,365	1,184,398	694,798	840,110	11,006	Plant In Service
Prop 44 Loan Repayment #1	0	0	0	0	0	0	0	Plant In Service
Prop 82 Loan Repayment	120,000	51,143	15,122	23,310	13,674	16,534	217	Plant In Service
SDWSRF Loan Repayment (CL2 Buildings)	122,000	51,995	15,374	23,698	13,902	16,810	220	Plant In Service
SDWSRF Loan Repayment (Ent Canal)	78,000	33,243	9,829	15,151	8,888	10,747	141	Plant In Service
SRF Loan for Residential Meter Retrofit	2,570,200	1,095,399	323,890	499,260	292,879	354,132	4,640	Plant In Service
SRF Loan for SE SWTF	0	0	0	0	0	0	0	Plant In Service
2016 Water Revenue Bonds	0	0	0	0	0	0	0	Plant In Service
2017 Water Revenue Bonds	0	0	0	0	0	0	0	Plant In Service
2018 Water Revenue Bonds	0	0	0	0	0	0	0	Plant In Service
2019 Bonds Water Revenue Bonds	0	0	0	0	0	0	0	Plant In Service
2020 Bonds Water Revenue Bonds	0	0	0	0	0	0	0	Plant In Service
Less: 2010 Bonds Reserve Fund Interest	-392,900	-167,451	-49,512	-76,321	-44,772	-54,135	-709	Plant In Service
Less: Projected Reserve Fund Interest	0	0	0	0	0	0	0	Plant In Service
Total Debt Service	**16,381,000**	**6,981,456**	**2,064,289**	**3,182,003**	**1,866,644**	**2,257,038**	**29,570**	
Enterprise Net Income (net of Debt Svc)	**-60,517,100**	**-27,736,422**	**-5,004,922**	**-9,711,961**	**-4,896,440**	**-6,539,491**	**-6,627,865**	
Reserve Fund Balance (Unrestricted Reserve)								
Previous Ending Balance								
Enterprise Net Income								
Plus: Non-operating Revenue	3,025,400	1,289,402	381,253	587,683	344,750	416,851	5,461	Plant In Service
Plus: Transfers from Rate Stabilization Fund	0							
Less: Enterprise Funded CIP	(17,180,919)	-7,322,376	-2,165,092	-3,337,387	-1,957,796	-2,367,254	-31,014	Plant In Service
Less: Miscellaneous Transfers In/(Out)								
Revenue Required from Rates	**-74,672,619**	**-33,769,395**	**-6,788,762**	**-12,461,665**	**-6,509,487**	**-8,489,893**	**-6,653,417**	
(negative values represent funds required)		**45%**	**9%**	**17%**	**9%**	**11%**	**9%**	

1 Allocations for categories other than "Customer" and "Fire Protection" (which are allocated to a single functional category) are shown below:

	Basis of Allocation (%)					
	(BAS)	(XMD)	(XMH)	(FP)	(MTR)	(CUS)
Plant In Service	42.6	12.6	19.4	11.4	13.8	0.18
Base/Max Day/Max Hr/Fire	46.1	13.6	40.3	0.0	0.0	0.0
System Operations	74.6	0.0	0.0	11.4	13.8	0.2